

1 **ADINA SCHWARTZ, civilian, was called as a witness for the**
2 **defense, was sworn, and testified as follows:**

3 **DIRECT EXAMINATION**

4 **Questions by the civilian defense counsel:**

5 Q. Ma'am, would you please state your name and your
6 business address for the record.

7 A. My name is Adina Schwartz. That's S-C-H-W-A-R-T-Z;
8 first name, A-D-I-N-A. You have it.

9 I teach-- I'm at John Jay College of Criminal Justice,
10 City University of New York. Do you want a street address?

11 CDC: That's fine for now, ma'am.

12 May I approach, Your Honor?

13 MJ: You may.

14 CDC: Thank you.

15 Q. Ma'am, I'm handing you what's been marked as Appellate
16 Exhibit XXII, and ask if you can identify that, please?

17 A. [Examined AE XXII.] That's my CV. It may need to be
18 slightly updated.

19 Q. But it is accurate?

20 A. Right.

21 Q. Thank you.

22 [The civilian defense counsel retrieved Appellate Exhibit
23 XXII from the witness.]

1 Ma'am, you said that you are at the John Jay University.

2 What is it you do there?

3 A. I'm a co-professor. I teach so-- from the
4 undergraduate level up through-- We're part of the City
5 University of New York System, and we have-- which is commonly
6 referred to as CUNY, and we're sort of the Headquarters of the
7 Criminal Justice Ph.D Program, which is probably unique among
8 Ph.D programs in the United States in having a forensic science
9 track. I teach a course in scientific evidence law in the
10 forensic science track, not every year, every 2 or 3 years.

11 I also teach in Masters Programs in Criminal Justice in
12 forensic computing and primarily evidence law there, although I
13 teach a sort of-- a cyber-surveillance law also for the
14 forensic computing folks. And I teach evidence law and other
15 courses to undergraduates.

16 Q. Have you ever been called upon to testify as an expert
17 witness in trials-- criminal trials?

18 A. Yes, I have.

19 Q. And what fields have you testified in or what field
20 have you testified about?

21 A. I have only testified on firearms and toolmark
22 identification, and I think I've only testified in firearms
23 identification cases.

1 Q. Okay. And have you yourself written in this field of
2 firearm identification?

3 A. Yes, I have. Um, let's see. I started off way-- in
4 2005. I guess the earliest thing I-- the piece I published was
5 a piece in *Encyclopedia of Law Enforcement*. And then I
6 published an Amicus Brief that had been prepared and not
7 submitted in a bolt cutter identification case in *Journal of*
8 *Philosophy, Science and Law*. I published an article in *Columbia*
9 *Science and Technology Law Review*. I published a chapter in
10 Jane Moriarty's treatise on *Psychological and Scientific*
11 *Evidence in Criminal Trials*. I published a reply in *Journal of*
12 *Forensic Sciences*; the reply to my *Columbia STLR* article and
13 some other articles that were published by Ronald Nichols in
14 *Journal of Forensic Sciences*. I published two articles in *The*
15 *Champion*. And I think that's it on firearms and toolmark
16 identification.

17 Q. Thank you, ma'am. To get something out of the way, are
18 you a hands-on firearm examiner yourself?

19 A. No, I am not.

20 Q. Your field then is the-- being an academic expert in
21 the literature and scientific status of reliability in the field
22 of toolmark and firearm identification?

23 A. That's a pretty accurate description.

1 Q. And you say you've testified in that field before?

2 A. Yes, I have.

3 CDC: Your Honor, based upon Appellate Exhibit XXII and the
4 testimony of Professor Schwartz, the defense request that she be
5 recognized as an academic expert in the literature and
6 scientific status of reliability in the field of toolmark and
7 firearm identification.

8 MJ: Government, any objection?

9 TC: Yes, Your Honor. If I may voir dire the witness on
10 that first.

11 MJ: Go ahead.

12 CDC: Your Honor, the defense would point out that the
13 Convening Authority has funded Professor Schwartz to be here for
14 that very field ----

15 MJ: To be an expert?

16 CDC: --- as an expert, but we have no objection to the
17 government wanting to ask questions.

18 **[END OF PAGE]**

19

1 **[The trial counsel conducted voir dire of Professor Adina**
2 **Schwartz as follows:]**

3 Q. Professor Schwartz, have you ever been trained as a
4 Firearms Examiner?

5 A. Asked and answered. No.

6 Q. Have you ever taken a Firearms Proficiency Exam?

7 A. No, I have not.

8 Q. Have you ever seen a Firearms Proficiency Exam?

9 A. I have seen and studied the CTS tests that are online,
10 including the many examiners' comments that say they're overly
11 simple.

12 Q. Have you yourself used a comparison microscope?

13 A. As I told you yesterday, I have looked into a compare--
14 looked through a comparison microscope. I have never used it in
15 the sense of conducting my own examinations.

16 Q. Have you fired a gun, ma'am?

17 A. No, I have not.

18 Q. Have you disassembled a gun?

19 A. No, I have not.

20 Q. Would you be able to identify the working parts inside
21 of a firearm?

22 A. Some; not all.

23 Q. You'd be able to identify the trigger, the barrel?

1 A. Yes, I could do that much.

2 Q. Ma'am, do you have any academic degrees in anything
3 other than philosophy or law?

4 A. No, I do not.

5 Q. Ma'am, are you certified in the field of statistics in
6 any way?

7 A. To my knowledge, there is no such thing as
8 certification in the field of statistics. In standard academic
9 fields the concept of certification has no place.

10 Q. Ma'am, are you a member of the American Statistical
11 Association?

12 A. No, I am not, though, I should say that my articles in
13 the *Champion*----

14 Q. That's-- Thank you, ma'am.

15 Ma'am, do you have any experience doing statistical study
16 design?

17 A. No, I do not.

18 Q. Ma'am, do you have any experience in statistical
19 modeling?

20 A. No, I do not, except as reading studies and criticizing
21 and evaluating, and I do have experience in that.

1 Q. And I apologize if this question is redundant to an
2 earlier answer. Did you say you have never attempted to make a
3 comparison between two objects using a comparison microscope?

4 A. I have-- No, I have not.

5 Q. Ma'am, could you please tell me again how many times
6 you have testified as an expert in the field of the literature
7 of firearms and toolmark identification?

8 A. Okay. Well, I should say it varies. There are courts
9 that have qualified me in Firearms and Toolmark Identification,
10 period. There are courts that have qualified me as an academic
11 expert. If you want to go through the cases: In Commonwealth of
12 Massachusetts versus Meeks I was qualified, period. In United
13 States versus Diaz, I was qualified as an expert on the
14 literature. In United States versus Brown, which is a case that
15 led to United States versus Glynn, in Judge Rakoff's ruling, I
16 was qualified as an expert, period. In-- Um, let's see, where
17 did I testify after that? In United States-- in State versus
18 Anderson, I'm not sure if there were any qualifications placed.
19 In, um-- In South Carolina, Freiburger----

20 Q. Okay. And I didn't mean to ask for the----

21 A. Okay, I'm trying to figure it out----

22 Q. --- the listing----

23 A. Okay, I have----

1 Q. Approximately is fine, ma'am.

2 A. Okay, I have qualified either as an expert-- per se or
3 as an expert in the literature in 13 hearings.

4 Q. And have you ever qualified as an expert in either of
5 those two subjects to testify at a trial in front of----

6 A. No, I have not.

7 Q. Have you been offered as an expert in either of those
8 subjects to testify at a trial in the past?

9 A. Yes, I have.

10 Q. And is it correct that each of those four times, you
11 were the subject of a Daubert Hearing yourself?

12 A. No, it is not. That's when the-- when courts reach
13 decisions as to whether I could testify at trial after there was
14 a Daubert or Frye Hearing on the admissibility of the
15 prosecution expert's testimony. No hearings were ever held as
16 to whether I could testify at trial.

17 Q. And if I understand the question correctly, you're
18 saying that you've-- Well, I'll rephrase that.

19 Is it correct that in the federal case of U.S. v. Taylor,
20 you testified at a Daubert Hearing and were subsequently denied
21 by the court to testify at the trial on that subject?

22 A. Right. But I am telling you that it was not a Daubert
23 Hearing, which you seem to apply as to the admissibility of my

1 testimony. It was a Daubert Hearing as to the admissibility of
2 the Firearms Examiner's testimony.

3 Q. Are you familiar with the language of the court's order
4 denying your testimony in that case?

5 A. Yes, I have. And if you would like to read my
6 affidavit replying to it, I would be happy to give it to you.
7 An affidavit replying in a subsequent case.

8 TC: Where is the-- [Reviewed documents.]

9 MJ: Counsel, before we continue any further, I want to
10 reflect on the fact that the defense has indicated that the
11 government appointed this witness as the defense expert.

12 Is that not correct?

13 TC: Ma'am----

14 MJ: Because if you're trying to prove she's not qualified
15 as an expert, then the government will need to provide one.

16 TC: Your Honor, if the court requests, I will provide both
17 the government's appointment of Mr. Robert Poole as a qualified
18 Firearms Examiner, as a defense expert consultant which-- and
19 he has been working for the defense in this case; in addition to
20 the witness on the stand. And for the purpose of this motion, I
21 want to make sure that we're correctly limiting her testimony to
22 areas in which she actually has expertise and we are qualifying
23 that expertise appropriately.

1 MJ: All right. So you're not arguing that she's not an
2 expert, you're just trying to clarify in what field she's an
3 expert, and do you think that's not literature?

4 TC: Ma'am, the government believes that she is not an
5 expert as stated.

6 MJ: Okay. Then before you ask more questions, I want to
7 know where they're going. What do you claim that she's an
8 expert in?

9 TC: She's an expert in testifying, ma'am, but she is not
10 an expert in the literature, as has been determined by prior
11 court rulings.

12 MJ: An expert in testifying. What does that mean?

13 TC: I don't know, ma'am. That's why we think that her
14 testimony here would be inappropriate.

15 MJ: I'll give you some leeway to ask some more questions,
16 but keep it short.

17 TC: Thank you, ma'am.

18 May I approach the witness?

19 MJ: You may.

20 **[The trial counsel continued voir dire of the witness as**
21 **follows:]**

22 Q. Ma'am, I'm showing you a 14-page document. Can you
23 tell me if you recognize that, please?

1 A. [Examined document.] This is the unpublished opinion
2 in Taylor as opposed to the published opinion, which, very
3 arguably, it contradicts the claims in the unpublished opinion.

4 TC: I'm handing the document to the court reporter.

5 [The court reporter marked the document as Appellate
6 Exhibit XXIII.]

7 Q. Ma'am, are you familiar with the portion on page 13 of
8 this document that reads: "These are serious criticisms, not
9 just of Doctor Schwartz's conclusions, but the integrity of her
10 scholarship"?

11 A. I am familiar with it in the sense that I know it takes
12 verbatim without any explanation, without even quotations,
13 criticisms of my article by Ronald Nichols in testimony and by
14 Mr. Nichols in an article published in *California Association of*
15 *Criminalist News* of which he was then editor. The article was
16 published in *California Association of Criminalist News Letter*
17 after *Columbia Science and Technology Law Journal* rescinded its
18 acceptance-- *Science and Technology Law Review* rescinded its
19 acceptance of that article. You will note that if you just read
20 the opinion, you cannot glean the substance, the criticisms, in
21 Nichols-- Mr. Nichols' article. I would like to have the
22 opportunity to indicate what the substance of those criticisms

1 were and to show that it rests-- Mr. Nichols' inability to read
2 closely and appreciate the notion of logical implication.

3 Q. And, ma'am, are you familiar with the portion of this
4 order that states, "The court finds that Doctor Schwartz is not
5 qualified to give an expert opinion as to the conclusions
6 reached by the government's Firearms Examiner, Ron Nichols in
7 this case"?

8 A. Yes, I am familiar with that.

9 Q. And are you familiar with----

10 A. And as-----

11 Q. --- the portion of the order that reads: "Further, the
12 court finds that Doctor Schwartz' proposed expert testimony as
13 to her opinion that the field of firearms and toolmark
14 identification is inherently unreliable, is not admissible"?
15 And lists----

16 A. Yes, I am familiar with that.

17 TC: Your Honor, I offer this document as an appellate
18 exhibit [referring to Appellate Exhibit XXIII].

19 MJ: Go ahead.

20 **[The trial counsel continued voir dire of the witness as**
21 **follows:]**

22 Q. And, ma'am, is it correct that in each of the four
23 cases in which you have been offered as an expert in either the

1 field of firearms identification or the literature of firearms
2 identification, the courts denied the request of the proposing
3 party to allow you to testify in court at the trial?

4 A. To my knowledge, these are not the only cases where I
5 was offered. There were other cases when the issue did not
6 arise because the result of the hearing was a plea deal. There
7 was a case in Colorado in February where I was supposed to
8 testify and ended up not testifying because 2 weeks before the
9 government took a 32 to 97-year max-- mandatory minimum and
10 reduced it to no mandatory minimum with a possibility of
11 probation.

12 TC: Thank you, ma'am.

13 Your Honor, no further questions for voir diring the
14 witness.

15 MJ: Defense?

16 [The court reporter marked the document as Appellate
17 Exhibit XXIV.]

18 CDC: Your Honor, the defense has had marked the
19 appointment of Professor Schwartz as a defense expert by the
20 Convening Authority. I apologize if there's highlighting on it,
21 but that was because it was my only copy. However, the
22 highlighting suggests why I didn't expect I would need it. The
23 highlighting says that Professor Schwartz is recognized as an

1 academic expert on the literature and scientific status of
2 reliability in the field of toolmark and firearm identification.
3 The un-highlighted portion states that, if appointed, Professor
4 Schwartz will provide expert testimony at the motions hearing
5 and possibly at trial as to the reliability of toolmark and
6 firearm identification, signed by the Convening Authority.

7 Without needing to cross-examine based on the government's
8 voir dire, the defense reoffers Professor Schwartz as an expert
9 as indicated on Appellate Exhibit XXIV.

10 MJ: And, government, do you maintain your objection?

11 TC: Yes, Your Honor. And, if I may, with response to the
12 document that has been offered to you, you will note the date on
13 it. It was I believe the 20th of April. The date of the request
14 for this witness was April 16th. And none of the information
15 that was discussed here in voir dire was available to the
16 government at that time. So when she was approved by the
17 Convening Authority, it was based on the information largely
18 provided in the request; and that the Convening Authority's
19 decision to a make that initial approval of funding is not
20 binding on this court.

21 Thank you.

22 **[The military judge conducted voir dire of the witness as**
23 **follows:]**

1 Q. Professor Schwartz, I see that you've written many
2 publications on firearms and toolmark identification and you've
3 testified as to those earlier. What type of research have you
4 done in the area?

5 A. I've read I'd say a very large portion of the
6 literature, and based on my reading and analysis of the
7 literature, I've come-- I've come to an assessment as to the
8 reliability of the field. And I guess, also, I should say that
9 a lot of my analysis rests. I started in the field with an
10 article in *Harvard Journal of Law and Technology* that was about
11 Daubert versus Frye standards, but I worked extensively on use
12 of forensic DNA as the model. I, like the NAS Committee see
13 forensic DNA as a model. In fact, if you read the 2009 NAS
14 Report, you will see that my article is cited by the NAS
15 Committee for its comparison of the foundations for forensic DNA
16 and firearms and toolmark identification. I have also written
17 some on fingerprint identification. I'm very familiar with the
18 case law in the field as well as I'm quite familiar with the
19 legal literature-- with the-- rather, the literature of
20 firearms and toolmark identification.

21 MJ: I've reviewed Appellate Exhibit XXIII as well as
22 Appellate Exhibit XXII, and considered the arguments of counsel.
23 I'm going to overrule the government objection and qualify

1 Professor Schwartz as an expert in literature and scientific
2 status of reliability in the field of toolmark and firearm
3 identification.

4 You may proceed.

5 CDC: Thank you, Your Honor.

6 **[The civilian defense counsel continued examination of the**
7 **witness as follows:]**

8 Q. Professor Schwartz, you've indicated that you are
9 familiar with, obviously, Daubert and Frye, not only from your
10 academic background as a professor but also because you've
11 written about it as long as probably pre-Daubert, if I
12 understood you correctly.

13 A. Well, not pre-Daubert, actually, '96.

14 Q. Okay, ma'am.

15 A. '97. I misspoke.

16 Q. Let's start with some of the basic comments that we've
17 heard before. Let's talk about error rate, okay. What is error
18 rate? How can it be measured? How should it be measured?

19 A. Well, ideally what you want in an error rate is an
20 accurate assessment of what happens in people's day to day work.
21 And that leads to ideally what you'd want was to have-- if you
22 had proficiency testing, they should be blind. In other words,
23 people should be doing the work as they would do in a normal

1 laboratory, only some of the specimens are the objects of
2 testing, and that way you could see what's really going on would
3 be intermingled. And, ideally, again, if you intermingled your
4 specimens and people didn't know they were being tested,
5 ideally, it would be of the same rate of difficulty. And that's
6 where you get an assessment of an error rate for a field.

7 Q. Analogously to a drug testing laboratory that has 50
8 unknown samples and some outside agency smuggles in known
9 positives or negatives without anybody knowing it who is doing
10 the testing. That's the analogy.

11 A. Exactly. And the analogy, it would be the claim-- And
12 I think the committee makes it then-- our C-Committee, if we
13 can do that for drug testing, we can do that with commercial
14 companies, why can't we do it with forensic analyses, especially
15 when people's lives and liberties may be at stake?

16 Q. Now you've mentioned as a part of colloquy that you had
17 with the military judge that you've done a lot of reviewing of
18 studies. You were sitting in the courtroom when the government
19 went through the studies that Mrs. Sevigny relied upon or
20 referred to, correct?

21 A. Yes, I was.

22 Q. Are you familiar with those studies as well?

23 A. Yes, I am.

1 [The civilian defense counsel retrieved the exhibits from
2 the court reporter.]

3 Q. I'm going to just go through the way they were offered,
4 ma'am.

5 A. Sure.

6 Q. And basically ask if you have any comments about these
7 studies. I will-- Well, before I get there, Mrs. Sevigny
8 indicated that all of these studies are published in the AFTE
9 Journal. To your knowledge, ma'am, as an expert who has studied
10 in the field, is that a publically available journal?

11 A. No. On the East Coast there are two public libraries
12 where you can get it. The John Jay College of Criminal Justice
13 Library and I believe the George Washington Library; although, I
14 wouldn't swear to it. On the West Coast, I know because I had a
15 case in San Francisco and people wanted copies of the AFTE
16 Journal. The nearest place was U.C. Davis. So it's hard to
17 obtain. These days it's frustrating for people like me who work
18 in it because libraries can continue to get the hardbound
19 version, but it's been available online but to members-- in
20 electronic version, but to members only for the past year or so.
21 And to be a member, one either has to be a practicing firearms
22 examiner, a trainee, or they have honorary memberships where
23 people who've conferred service upon the field. So that means

1 that if, say the John Jay College Library wanted to have it and
2 we have graduate students working in the field, etcetera, we
3 could not get the online version, we'd have to wait until it
4 came out hardbound.

5 Q. So it's difficult to obtain but can be done through
6 libraries?

7 A. It can be done through libraries. Of course, the fear
8 and what will be interesting is a lot of journals, once they go
9 online cease producing the hardcover copy. Should they-- you
10 know--

11 Q. I understand, ma'am. You've been an academia for quite
12 a while. What do you understand peer-review to mean?

13 A. Well, ideally, if you're going to have peer-review,
14 first, it should be blind. You shouldn't know the people who
15 are reviewing you. Secondly, you need to avoid two types of
16 conflict of interest, ideally, conflict of interest in the sense
17 of it's your mentor, say, reviewing you or your collaborator,
18 who has all sorts of stake in your success. Conflict of
19 interest, it's the person working on a rival-- a rival proposal
20 who could-- reviews you. So, ideally, you'd want to do--
21 you'd want to have your peer-review broad in doubts in terms of
22 the people who are peer-reviewers, so that you don't get these
23 conflict of interest issues.

1 Q. Okay. And what----

2 A. And, in fact, it's standard journal when you're asked
3 to peer-review, at least I get it, a lot of times it'll ask you
4 do you know the person. And, in fact, when I'm giving something
5 to peer-review and someone asks me, you know, I often say,
6 "Look, I'm a friend of so and so is that," you know, "too much?"

7 Q. Is the-- to your knowledge, AFTE Journal a normal type
8 of publication or is it more restricted?

9 A. Well, the NAS 2009 Report referred to-- said it was
10 very disappointed in forensic science journals because most of
11 them were "Trade Journals," which is synonymous with Mrs.
12 Sevigny saying this was a journal by firearms examiners for
13 firearms examiners. And I should say their instance of the
14 Trade Journal was *Journal of Forensic Identification Sciences*,
15 which was-- from my point of view, it is much more open. You
16 can get JFI online. It's a much broader community. But that
17 was their example.

18 Q. Ma'am, I'm handing you Appellate Exhibit XIV, a
19 "Comprehensive Validity Study for the Forensic Examination of
20 Cartridge Cases." I believe you indicated you were familiar
21 with that?

22 A. [Examined AE XIV.] Yes, I am familiar with that study.
23 And the thing about the study that's-- Well, one of the

1 problems with interpreting this study is it had 42 consecutively
2 matched-- consecutively manufactured Glock cartridge cases.
3 Now, this was an FBI study. A small group took it, all of the
4 FBI examiners at the time. There were only eight. The FBI
5 policy is they never declare an exclusion if class
6 characteristics matched.

7 Q. And can you explain that briefly, what you mean by
8 that?

9 A. Okay. One of the things about firearms and toolmark
10 identification, there is not-- unlike fingerprint
11 identification, say, the criterion is one discernable
12 difference, one significant difference and it's not an
13 identification. And that's the uniform criterion for all
14 fingerprint examiners. DNA, one allele doesn't match.

15 TC: Your Honor.

16 MJ: One moment.

17 TC: Yes, counsel?

18 TC: I apologize. I have to object to this on relevance.
19 This is a firearms examination Daubert Hearing. She's
20 testifying about DNA and about fingerprinting; which, to our
21 understanding, she's not been qualified as an expert on nor are
22 they the same science, they're different.

23 Thank you.

1 MJ: I'm going to overrule the objection. I'll allow it as
2 background for-- to lay the foundation for her opinion.

3 CDC: Thank you, Your Honor.

4 **[The civilian defense counsel continued examination of the**
5 **witness as follows:]**

6 A. Okay. Well, in firearms and toolmark identification--
7 Because one of the things Mrs. Sevigny failed to mention is the
8 marks and didn't stress them. Marks a tool makes change over
9 time. So there's the question of-- if you observe differences
10 between two bullets, are the differences attributable to changes
11 in the barrel of the gun, the differences in the ammunition,
12 which makes a difference in the mark, to differences in the
13 pressure of velocity of firing; or, are they attributable to the
14 fact that in fact the bullets came from different tools? So you
15 might think you have to-- if you're going to differentiate on
16 class characteristic-- on individual characteristics, you need
17 to say some differences are so great that they can't be
18 attributable to different media-- to changes in the same tool.

19 The FBI----

20 TC: Your Honor.

21 MJ: One moment, Professor Schwartz, I see the government
22 counsel on his feet.

1 TC: I'm sorry. It sounded as though that answer-- I'm
2 not sure if she's answering the question originally asked, but
3 it appeared that that answer went into what sounded like
4 expertise in the actual application of techniques in examining
5 firearms and firearms-- and bullets and so forth, which she is
6 not an expert in.

7 She's an expert in the literature. And she did not testify
8 that this was something that was in the literature. She was
9 saying that this is how it is.

10 MJ: The court will give the testimony the weight that it
11 merits, understanding that this witness is an expert in the
12 literature and assigned to-- science of the reliability----

13 WIT: Anyway----

14 MJ: --- and that's where she's going.

15 WIT: Oh, I apologize, Your Honor.

16 **[The civilian defense counsel continued examination of the**
17 **witness as follows:]**

18 A. The FBI's criterion of identificate-- [sic] of
19 exclusion, which isn't everyone's-- but the FBI's rule is that
20 they never report an exclusion if class characteristics match.

21 Q. Which means if they are testing the same weapon system,
22 a Glock, an AK, then because that class is the same, no matter
23 what comes out, it's not an exclusion?

1 A. Right. I mean within types of Glock's.

2 Q. Understood.

3 A. But if you have two Glock cartridge case-- two Glock
4 guns, the same caliber, right, they'll never declare it an
5 exclusion. So to have a proficiency test, where exclusions
6 could be-- could be made, this proficiency test brought in
7 barrels from Berettas, SigSauers, and 9mm Lugers.

8 Q. Now you're referring to Appellate Exhibit XIV. Please
9 continue.

10 A. I am? Excuse me?

11 CDC: I was merely identifying that you were now back to
12 Appellate [Exhibit] XIV, away from the FBI----

13 A. Right. And now, what you find in this test, the report
14 is that there were no false negatives and no false positives.
15 What there am-- are-- were, however, were there were 290 true
16 negatives. There were only 118 elimination conclusions. Now,
17 what we don't know, because it's not in the study, is how many
18 of the 200-- Well, we know, actually, how many of the 290 true
19 negatives were-- were guns with the same caliber-- the same
20 class characteristics, were two Glock's, were two SigSauers. How
21 many were guns of different class characteristics? We need to
22 know that to evaluate the significance of the fact that 40--
23 40.-- 40.7 percent of the true negatives were mixed.

1 What's also interesting in this article, it's supposed to
2 be a validity test. If you're going to test the validity and
3 skills in your profession, you want to make it as difficult as
4 representative as possible.

5 Mr. Bunch indicates in the introduction that he choose
6 Glock cartridge cases because they were-- because they're well
7 marked. And, in fact, he says that had he chosen, he says,
8 "Depending on the design of a particular validity study,
9 inconclusive results could be expected to range from a small
10 fraction of total results to a large fraction. For example,
11 consider the likely results of this study if it had been
12 conducted with bullets," and he italicized "bullets fired from
13 Glock pistols." And what he's alluding to there, there had been
14 many instances of firearm examiners not being able to
15 distinguish between Glocks. In fact, so many that in the
16 literature, there are studies of attempts-- Law enforcement
17 purchases Glocks, but a lot of law enforcement agencies are
18 stopping purchasing Glocks after there was an incident in
19 Georgia in 2000 where there was fire-- a police officer fired a
20 gun. And all of the police officers in the department had Glock
21 pistols, and they were unable to determine, by examining the
22 pistols, which of the police officers had fired the gun. So
23 this is a big issue with Glocks. There's a reason his validity

1 study didn't consider Glock bullets. And he's telling you the
2 inconclusive rate would have gone way up.

3 The other thing that's good about the study, the good
4 thing, is he recognizes two problems that other studies don't.
5 First, he recognizes that a study gets skewed if he gets-- what
6 he calls self-selection bias. You call for volunteers. He made
7 all eight members in his unit take it. And he also says the
8 study gets skewed if you allow for survivorship bias. Some
9 people don't have-- you don't have to submit your results. He
10 made everyone submit the results.

11 His study was, he claimed, double-blind in terms of
12 different packets were randomly assembled and not all examiners
13 got the same packet. The people distributing didn't know who
14 had what. But he admits that his study was not blind in terms
15 of examiners knew they were being tested. Now he claims that
16 when examiners know they're being tested, they are likely to be
17 more conservative because of fear of repercussion for their
18 career. He claims he ruled this out because they-- because it
19 was anonymized [sic]. What he doesn't consider, they knew it
20 was a validation study. So might examiners be more
21 conservative? Because the way he sets up his study, he assumes
22 an inconclusive does nothing to cast doubt on the stature, the
23 reliability of the profession. People knew this going in.

1 Q. If I handed you each of the government's documents,
2 could you go through the similar kind of analysis and show the
3 weaknesses in each of those?

4 A. Yes, I could.

5 Q. Okay. And you are familiar with all the ones they
6 submitted previously?

7 A. Yes, I am.

8 CDC: In the interest of time, Your Honor, I'm not going to
9 do that.

10 [The civilian defense counsel returned the exhibits to the
11 court reporter.]

12 Q. The government did not offer but-- Well, I take it
13 back. I'm not sure. They did. There's one specific one I wish
14 to address, ma'am, and that is Appellate [Exhibit] XVII,
15 "Identification of Consecutively Manufactured Extractors," by a
16 Technical Sergeant Lyons. Extractors are apparently important
17 in this case because that is the one place we have a mark.

18 Do you have any comments as to that study?

19 A. Um, yes. Well, first, of all----

20 Q. Excuse me. I may have made a layman's error in
21 confusing two words.

22 A. I think it's injector port-- marks.

1 Q. I did. And that's why we don't need to go through
2 that. My mistake. I apologize to all parties.

3 [The civilian defense counsel returned Appellate Exhibit
4 XVII to the court reporter.]

5 Although she said she did not employ it, Mrs. Sevigny
6 talked about the conservative criteria. Do you have any
7 observations about the use of that mechanism and its benefits or
8 lack of benefits?

9 A. Well, as originally-- The original work by Biasotti
10 where the actual conservative criteria was not propounded by
11 Biasotti/Murdock until 1997. Nobody used it. The foundational
12 study that set the frame was in 1955. But basically since '97,
13 some folks have been using it. The biggest problem with CMS is
14 it says you have to find "X" numbers of consecutive matching
15 striae-- really line, or "X" number of sets. But it doesn't
16 define what a striation is. And examiners agree that counting
17 striations is subjective; so you can expect the same two
18 experienced examiners, given the same surface, given the same
19 land in a bullet, will count different numbers of striations,
20 which means two experienced examiners could count different
21 numbers of matching striations onto bullets. That's the biggest
22 problem.

1 The second problem, this is a criterion that's supposed to
2 apply to all striated toolmarks, all striations on bullets, on
3 injectors, on chisels, etcetera. And there haven't-- there
4 hasn't been-- there were a variety of small studies, but there
5 hasn't been any systematic construction of a database. And you
6 get problems at the level-- Biasotti's original study that was
7 back in 1955, no computers, etcetera, he uses what we call a
8 convenient sample. He just happens to have "X" number of used
9 gun-- .38 Smith & Wesson revolvers around, "Y" number of new
10 ones. And he does-- And he compares numbers of matching
11 striations on them. And he does it to get a big enough number
12 for statistical significance. He doesn't compare numbers of
13 matching striations on whole guns. He compares it on curves,
14 lands, and grooves. So, if you have five lands and grooves;
15 that would get a bigger comparison number. The trouble is this.
16 As applied-- When examiners apply CMS the studies largely show,
17 yes, it works, you don't get false positives. But what they
18 get, a study by Miller, is an overwhelming number of false
19 negatives. One study where with one gun-- I forget which, zero
20 percent of the known matches satisfy the criterion. So they do
21 a fix. They count the number of matching striations on all the
22 lands of the gun and they sum them up to see if they satisfy;
23 but, what-- All Biasotti proved was that you won't get-- All

1 he proved was if you-- There was a certain threshold, where if
2 you went above it you'd never make a misidentification, right?
3 But he meant if you went above it-- All he knew was if you went
4 above it on a single land, that doesn't prove, it doesn't follow
5 if you go above it on multiple lands, you might get a
6 misidentification; and, hence, the criticism by Champod, which
7 is published. And Champod is a very distinguished Swiss,
8 generalist forensic scientist who's now working on a
9 computerized database for fingerprint ID. That you cannot look
10 at Biasotti's paper and you can't look at Murdock's subsequent
11 work and get a criterion that applies to whole guns. It just
12 wasn't-- It's not sorted out that way. But, nonetheless, they
13 apply it to whole guns.

14 Q. Okay, ma'am. You're familiar with the National Academy
15 of Science and their report in 2009?

16 A. Yes, I am.

17 Q. What is the National Academy of Science?

18 A. Well, the National Academy of Science is a group of--
19 an independent group of-- of distinguished scientists, first
20 established in 1963, to deal with problems of national-- when a
21 federal agency wants advice. It operates through the National
22 Research Council, which is really the operating arm. And the
23 National Research Council appoints committees who serve on a

1 voluntary basis who are multi-disciplinary, to deal with
2 problems.

3 Q. So it's a federal level agency to help federal agencies
4 who need research?

5 A. Well, it's not a federal agency. It's an independent
6 organization, but its mission is to help federal agencies who
7 need research.

8 Q. Okay. And you're familiar with their report
9 "Strengthening Forensic Science in the United States: A Path
10 Forward," in 2009?

11 A. Yes, I am.

12 Q. And with regard to the field of firearm and toolmark
13 identification, can you summarize their significant findings?

14 A. Well, their most significant finding is that the AFTE
15 Theory of identification is the best guidance the field has to
16 offer as to a protocol for making an identification; but, the
17 protocol is so ill-defined in terms of leaving it to each
18 individual to figure out on the basis of his or her own training
19 and experience what the best known non-matches as to provide no
20 guidance.

21 Q. Now that was put out in 2009. You've been involved in
22 this field longer than that?

23 A. That's correct.

1 Q. Did that finding change your opinions that you had
2 developed prior to its report?

3 A. No.

4 Q. Or did they confirm your beliefs?

5 A. The only difference in my beliefs, and that's on the
6 basis of a Ballistic Imaging Report in 2008 and this, I--
7 Before the Ballistic Imaging Report, I always used to argue,
8 let's not worry about whether the premises of uniqueness and
9 reproducibility of two marks are correct, because even if
10 there's-- they're correct, there's no reliable method for
11 making a match, and that's also the focus of the NAS 2009
12 Report. But the 2009 Report also adopts the finding of the 2008
13 Ballistic Imaging Report that the uniqueness and reproducibility
14 of firearms, toolmarks has not been scientifically established.
15 The studies done by firearms and toolmark examiners purporting
16 to show it don't do the job, and to do the job they claim you
17 need work by people trained in experiential design, by
18 physicists, by metallurgists, and that it would be an enormous
19 amount of research is needed to establish those premises.

20 Q. You mentioned the word "reproducibility." How did you
21 mean that, ma'am?

22 A. Oh, the way they use reproducibility; it's, again, the
23 problem that the marks a tool makes change over time. And since

1 the technique of firearms and toolmark identification is looking
2 at a test fired bullet from a gun and looking at a bullet
3 recovered from a crime scene, if there's a-- the question is
4 you will always-- and it's a mantra among firearms and toolmark
5 examiners; no two bullets, even fired from the same gun
6 sequentially ever have exactly the same marks. So, the question
7 is do the marks change so much that they can-- that you can
8 look at two bullets and you can trace them back? And there are
9 reproducibility studies by firearms and toolmark examiners, and
10 both reports greatly, in my view, said that the studies just
11 were inadequate.

12 Q. Once the 2009 Report came out, are you familiar with
13 any commentaries that have been provided subsequent to it; for
14 example, by the Honorable Harry T. Edwards?

15 A. Yes. Well, Judge Edwards, about 2 weeks ago, it may be
16 3 weeks now, delivered a speech to judges of the District of
17 Columbia Superior Court talking about the report. I mean, what
18 he focused on most specifically, he claimed that a-- that, you
19 know, he had seen a lot of briefs by Assistant United States
20 Attorneys quoting him to the fact that the report had no
21 implications as to admissibility. And he said that was a total
22 misquote; and he thought the report-- and he had come in with
23 no misconceptions, show that all forensic identification

1 sciences, except DNA, were not adequately-- were not-- had no
2 basis for their individualization claims-- for their
3 identification claims. And he claimed that of course for courts
4 were to do justice, regardless of whether they were Frye or
5 Daubert courts; they needed to take into account the problems
6 that the report had discovered with the forensic identification
7 sciences.

8 Q. Are you familiar with a procedural order regarding
9 trace evidence from March 2010 by the Honorable Judge Nancy
10 Gertner?

11 A. Yes. In fact, in his speech, Judge Edwards endorsed
12 Judge Gertner's procedural order, which he hands counsel in all
13 criminal cases that potentially involve trace evidence----

14 MJ: One moment, Professor Schwartz.

15 Yes, trial counsel?

16 TC: Your Honor, the document that she's referred to talks
17 summarily about trace evidence. Since trace evidence is not at
18 issue here, the-- I don't want to say "the question," because
19 the question might have been in line, but the answer is going
20 into something that is, again, patently unrelated to firearms
21 examination and its reliability.

22 MJ: Mr. Court?

1 CDC: And maybe I can ask a question to help the
2 government's understanding, Your Honor.

3 MJ: All right. Please clarify to make it relevant. Thank
4 you.

5 CDC: Yes, ma'am.

6 MJ: Objection sustained.

7 **[The civilian defense counsel continued examination of the**
8 **witness as follows:]**

9 Q. In your understanding, I realize you are not Judge
10 Gertner, ma'am, but in your understanding of her order, what was
11 included in the concept of trace evidence as she meant it?

12 A. Well, my understanding of her----

13 TC: Objection, Your Honor. I don't understand what basis
14 the witness has to answer that question.

15 WIT: Well I can explain my basis.

16 MJ: Mr. Court, it appears to me as though you are in fact
17 trying to establish the relationship and the tie. Trial
18 counsel, give the defense counsel an opportunity to do that.

19 Objection overruled.

20 **[The civilian defense counsel continued examination of the**
21 **witness as follows:]**

1 Q. The question was being an expert in the field of the
2 literature, and an order being a part of the literature, what is
3 your understanding of trace evidence as used by Judge Gertner?

4 A. Well, first of all, as used by the Ph.D. students in
5 forensic----

6 CDC: Excuse me, ma'am. The question was strictly----

7 A. A standard use of trace evidence often encompasses
8 firearms and toolmark identification and fingerprint evidence as
9 well. As relayed to me by attorneys who have practiced before
10 Judge Gertner; she so understands it.

11 Q. Thank you, ma'am. Is-- You were asked if you were a
12 member of the American Statistical Association and you said you
13 are not.

14 A. No, I'm not.

15 Q. But are you familiar with a press release they put out
16 regarding the NAS Report?

17 A. Yes, it was sent to me by the American Statistical
18 Association with whom I've worked closely on these issues.

19 Q. Is it true that part of the-- much of the issue that
20 the NAS had with some areas of forensic science, including
21 firearms, dealt with an absence of statistical backing for what
22 they were claiming?

1 A. Right. They were concerned with two things: An
2 absence of random match probabilities and inadequately
3 calculated error rates. And----

4 Q. Did the American Statistical Association comment on the
5 NAS Report in this regard?

6 A. Yes. Well, the American Statistical Association
7 endorsed the report and specifically its recommendation for the
8 creation of a National Institute of Forensic Sciences. And they
9 pointed to the need for-- for the input of statisticians to
10 establish adequate foundations for the forensic sciences. And
11 they specifically spoke of various areas where statistical input
12 had been lacking and were needed to be brought to bear.

13 Q. Ma'am, you've talked about the AFTE and its journal and
14 I believe Mrs. Sevigny talked about their theory of
15 identification as it relates to toolmarks. Are you familiar
16 with an article published in the AFTE Journal in 1998 about
17 that?

18 A. Which?

19 Q. About the theory of identification as it relates to
20 toolmarks?

21 A. Oh, that's-- It's not really-- I won't call it an
22 article; that's their theory of identification.

1 Q. Okay. And it's-- But it was published in their
2 journal in 1998?

3 A. Right.

4 Q. And at that point, did it also point out that currently
5 the interpretation of individualization and identification is
6 subjective in nature?

7 A. Yes, it did.

8 CDC: Thank you, ma'am.

9 Your Honor, the defense would offer what's been marked
10 Appellate Exhibit XII, a series of articles, which was just gone
11 through by the defense in some detail, which have already been
12 provided to the court and the government via email attachment,
13 and we ask that they be incorporated in the record.

14 MJ: Okay.

15 TC: Your Honor, the government objects to Numbers 1 and 2
16 on relevance, in that neither of them discuss firearms or
17 toolmark examinations in their text. And the government objects
18 to Number 4 and Number 7 as hearsay. These are articles by the
19 witness; basically, being offering for bolstering purposes, what
20 she's saying on the stand, but they have not been necessarily
21 demonstrated to qualify as a hearsay exception as learned
22 treatises.

1 MJ: Counsel, as you know the rule of hearsay don't apply
2 in a preliminary hearing. So I'm going to overrule your
3 objection on that basis. With respect to the-- First of all,
4 the court finds that they are relevant and that they do have
5 some tendency to go to show a fact and to assist the court in
6 this determination.

7 So, Appellate Exhibit XII is accepted as presented.

8 CDC: Thank you, Your Honor.

9 **[The civilian defense counsel continued examination of the**
10 **witness as follows:]**

11 Q. Professor Schwartz, you're aware that much of the
12 commentary about acceptance of firearm and toolmark
13 identification relies on the fact that we've always done it this
14 way, it's been accepted for 50 years or 100 years and never been
15 questioned before. Those kinds of arguments, correct?

16 A. Yes.

17 Q. Based on your research into the field, are you aware of
18 any previously accepted disciplinary review, if you will, where
19 criticism had led to the exclusion of that?

20 A. Yes, I am. One key instance, um, comparative bullet
21 lead analysis. And comparative bullet lead analysis was, like
22 firearms and toolmark identification, an identification
23 technique----

1 TC: Your Honor, I beg your pardon.

2 MJ: Do you have an objection, counsel?

3 TC: Yes, Your Honor. The witness has just offered an
4 opinion, a conclusion that based upon her-- She just said that
5 this particular activity is scientifically the same as the
6 other, but she----

7 MJ: I think----

8 TC: --- doesn't have the background to make that judgment,
9 Your Honor.

10 MJ: It appears as though the witness was about to clarify
11 how they were similar based on her review of the literature. So
12 the objection is overruled.

13 **[The civilian defense counsel continued examination of the**
14 **witness as follows:]**

15 Q. Professor Schwartz, please continue with what you were
16 saying about the comparison between firemark [sic]-- firearm
17 and toolmark identification and CBLA.

18 A. Okay. Well, CBLA was like firearms and toolmark
19 identification, a forensic identification technique. Like it,
20 it had severe problems in drawing conclusions, but the-- I
21 should say in some ways it was more-- in a lot of ways it was
22 more sophisticated. The basic-- CBLA was used when you got
23 bullets that were so highly damaged that firearms and toolmark

1 identification couldn't be applied. Only one lab in the country
2 used it, which was the FBI Lab, and that's because highly
3 sophisticated machinery was involved in it. Bullets are
4 manufactured out of old batteries that are melted down into big
5 pigs; and, basically, nuclear reactor-type machinery, not
6 affordable for the average lab, could break down the composition
7 of a pig and distinguish the number of elements and the
8 percentages of elements. And what happened in bullet lead
9 analysis was you take-- examiners would take deformed bullets
10 found at the crime scene, do an analysis through this highly
11 sophisticated nuclear reactor. Precisely, they knew which
12 elements they were looking at; they could get an accurate
13 reading of percentages. They'd do the same thing with bullets,
14 say, spent-- live bullets found in a box at the defendant's
15 home. The problem, as revealed in a previous National Academy
16 of Science Report, was there was no basis for assuming that just
17 because bullets have the same composition they must have come
18 from the same box. And there was no basis in two respects.
19 First, the pigs didn't have the homogenous composition; so you
20 [sic] could have come from the same pig or the same box and not
21 have the same composition. And then, secondly, the pigs were
22 absolutely huge; so it could be that there'd be a local Wal-
23 Mart, and there was shipment out of a pig with bullets and

1 everyone in the town had bullets. So the question was-- the
2 issue was before you can conclude there's an identification,
3 right, before you can say these bullets come from this box, you
4 have to ask the random match probability question, what is the
5 likelihood that some other box of bullets would have
6 compositions that also matched? And the committee found that
7 that question in fact hadn't been asked. The FBI said, "Oh,
8 we'll do the research to answer it" A year later they abandoned
9 the technique, and about a year and a half or so ago, maybe 2
10 years, the FBI together with the Innocence Project and with the
11 National Association of Criminal Defense Lawyers is now
12 investigating past cases to see if people were unjustly
13 convicted on the basis of a bullet lead analysis.

14 Q. And do you see a similar concern with regard to firearm
15 and toolmark identification?

16 A. Yes, I do. And the same thing. There is the
17 conclusion, you see "X" amount of similarity, they must have
18 come from the same tool. What's the basis? In my mind's eye,
19 based on my experience, they couldn't have come from any other
20 tool. It gets even worse because people agree within the field
21 that two trained examiners, based on their experience, can have
22 different criteria of identification and reach different
23 conclusions; some will say enough for identification; some will

1 say inconclusive. Doing it in your mind's eye isn't enough.
2 You need a calculation of random match probabilities, and this
3 gets us back to the NAS 2009 basic criticism, and I'm very proud
4 that they cited my article in this regard, that the random match
5 probability issue was worked out for forensic DNA, and that's
6 why it's the only forensic identification science that currently
7 stands on adequate foundations.

8 Q. And you're saying that the current state of firearm and
9 toolmark identification is not on that foundation and is
10 therefore unreliable as a conclusion that this cartridge came
11 from that weapon?

12 A. Well, then I should also say that unlike bullet lead
13 analysis, this stuff is weaker because the first step, if you're
14 going to build databases and calculate a random match
15 probability, first you need to specify what precise
16 characteristics am I relying on? Firearms and toolmark
17 examiners don't do that. Bullet lead people did. There were
18 "X" elements.

19 Secondly, to specify how do I measure whether they're the
20 same element? Bullet lead; they did it. No one ever disputed
21 those measurements are accurate. By contrast, firearms and
22 toolmark people-- I was reading one of the articles the

1 government submitted say things like, "Well, you know, we could
2 measure these characteristics, but we don't have
3 to-- we know they're identical." And they say things like,
4 "Hey, we know that two examiners will count-- will count
5 different numbers of striae on the same object." So they don't
6 have measurements, right. Once you don't have that, then if you
7 don't-- haven't defined your characteristics and haven't
8 measured them, then you can't calculate the frequency of
9 variations because you don't know what variations you're talking
10 about. So you can't-- you don't have-- you can't build a
11 database, you have nothing to search for in a database. And
12 then, of course, you can't do the last step, which was the step
13 that the 1992 NRC Report dinged forensic DNA on in that version,
14 which lead courts to exclude it, which lead the FBI to do the
15 work that they said they couldn't do, but then were able to do
16 to prove-- You have to prove-- If you're going to talk about
17 frequencies, random match probability, you have to divide your
18 object into parts and then you have to see whether the parts
19 whose frequency you've calculated, whether the frequencies are
20 statistically independent of each other. And none of that has
21 been done. The second two steps weren't done for bullet lead
22 analysis; steps one through four had totally not been done for
23 firearms and toolmark identification.

1 CDC: Thank you, Your Honor. I have no further questions.

2 MJ: Does anybody need to take a break before we proceed
3 with cross-examination?

4 TC: Your Honor, 5 minutes would be appreciated.

5 MJ: Let's take 10. We'll reconvene at quarter till.

6 [The Article 39(a) session recessed at 1435 hours, 25 May
7 2010.]

8 [The Article 39(a) session was called to order at 1450
9 hours, 25 May 2010.]

10 MJ: Court is called to order.

11 All parties present before the court recessed are again
12 present.

13 Government, you may proceed with your cross-examination.

14 TC: Thank you, ma'am.

15 **CROSS-EXAMINATION**

16 **Questions by the trial counsel:**

17 Q. Professor Schwartz, you stated earlier that you teach
18 in the forensic sciences track section of the John Jay School of
19 Criminal Justice. Was that correct?

20 A. No, I did not say that.

21 Q. I misunderstood. Could you clarify?

22 A. I said that there is a City University of New York,
23 CUNY Ph.D. Program in Criminal Justice that is housed-- it's

1 CUNY-wide, but it's really housed at John Jay. And within the
2 Criminal Justice Ph.D. Program there is a forensic science track
3 in which I sometimes teach a course.

4 Q. And is it correct that the course that you teach there
5 is a law class?

6 A. It's a law class; but, actually, we end up critically
7 reviewing articles by forensic scientists and articles by--
8 about the substance of forensic science. We usually end up
9 focusing on forensic identification after a while. We do some
10 law but we also look at articles in the subject matter areas.

11 Q. And is it correct that when you teach that class, you
12 do it yourself? You do not have a co-professor who is a
13 scientist?

14 A. I do it myself.

15 Q. And you had discussed, I believe earlier on in your
16 testimony with Mr. Court that calculation of error rates should
17 be done in such a way as to reproduce the day to day type of
18 work that examiners do. Is that correct?

19 A. That's correct.

20 Q. And you indicated that those should be done blindly.
21 Is that correct?

22 A. That's correct. People should not know they're being
23 tested.

1 Q. Is that how you do it in your class, ma'am, with your
2 students?

3 A. Wait a second. I'm not calculating my students' error
4 rates in day to day work. But if you think about my
5 examinations, first of all, I do sometimes grade blindly.
6 Second of all, I do try to give them questions that are an
7 accurate reflection of the difficulty of the course.

8 Q. But is it correct that they know when they're being
9 tested by you, ma'am?

10 A. Well, actually, they don't. One composite, I give spot
11 quizzes and precisely so that they'll have to prepare as they
12 would for an exam because they don't know whether there will be
13 a quiz or not, and that's the philosophy behind the spot quiz
14 component of my course.

15 Q. And do they recognize when the quiz is being
16 administered?

17 A. Excuse me? They know that----

18 Q. When you administer a quiz, ma'am, do your students
19 know that you're administering a quiz or do they think that
20 something else is happening in the room?

21 A. You're compare-- You're confusing apples and oranges.

22 Q. Ma'am----

23 A. You're confusing the question----

1 Q. --- can I just----

2 A. --- that when we give proficiency tests, we want to
3 know how people do day to day in a non-test situation. When I
4 give tests to my students, I want to know how they do on tests
5 that I think of as an accurate reflection of what they should be
6 learning in the course. It's apples and oranges. It's not my
7 business in effect of whether-- what they do day to day with my
8 course. A course is an artificial situation, if you like. It's
9 removed from life. But when you give proficiency testing, it
10 should not be an end in itself. The point is to get an index of
11 what people are doing day to day, moment to moment.

12 Q. I guess, ma'am, all I was trying to ask is when you
13 administer tests in your class, is it correct that your students
14 understand that they're being quizzed or that they're being
15 tested; and, that you then find that that is reliable
16 information for your purposes in determining how well they
17 understand what it is they're supposed to have learned or how
18 they're supposed to perform?

19 A. I would say, yes, and I would tell you that, again, you
20 don't understand that you're talking apples and oranges.

21 Q. Thank you, ma'am. I understood you to refer to the
22 peer-review process in the AFTE Journal and you offered some
23 criticism about the pool of people that the authors of various

1 studies turned to in order to get peer-reviewed. Is that
2 correct?

3 A. Well, if you read Dominique DeNeal's article about
4 peer-review in the AFTE Journal, one feature that he praises is
5 that people can suggest the people who should be their
6 reviewers. To me, that's counter to the goal of peer-review,
7 which is having people competent in the field who don't have
8 ties or allegiances to you assess the quality of what's written.

9 Q. The-- So that was-- The answer was, yes, you
10 understood the AFTE Journal to be not as strong as it should be
11 because of the selection, who is potentially selected to review
12 articles that are published?

13 A. Well, selection within the journal but more
14 importantly, as the NAS Report says, these are trade journals of
15 a narrow community where if you read the articles, the ones you
16 submitted, almost all of them start off saying our goal is to
17 vindicate our profession. Our goal is to provide guidance for
18 our profession. That's to-- Our goal is to teach you how to
19 have success on the stand. That's a trade journal. That's not
20 a normal scientific peer-reviewed journal. That was the
21 criticism in the ANS-- NAS Report. And there's a further
22 criticism in *American Statistical Associations*, support of NIHS,
23 they claim that they wanted for purposes of being able to review

1 work done to have things published in mainstream scientific
2 journals with statisticians on an editorial review board so that
3 work could be properly assessed. And I endorsed all those
4 criticisms.

5 Q. Is it also correct that peer-review, properly
6 understood, means that people who have adequate training and
7 experience to understand and comment upon the published work are
8 to be the ones who conduct the actual review of the----

9 A. Yes----

10 Q. --- of the publication?

11 A. And if you read the editorial by Thomas----

12 Q. And is it correct-- I'm sorry. I was just trying to
13 understand the--

14 A. Um,

15 Q. --- that that was the----

16 A. It is-- well--

17 Q. --- nature of it? Is it correct----

18 A. --- it's-- ---to accept the adequate training, as
19 assessed by Thomas Bowen, the former President of the American
20 Association of Forensic Sciences, which perhaps-- though I'm
21 not-- probably Mrs. Sevigny does not belong to, did an
22 editorial in *Journal of Forensic Sciences* in January where he
23 claimed that a problem with the forensic sciences was their

1 insular nature of who could criticize them and who could peer-
2 review, and the notion that only people within a specific
3 forensic specialty were capable of criticizing and evaluating
4 work within that specialty was a hindrance to scientific
5 progress.

6 Q. And, in fact, ma'am, haven't you referred to the
7 community of firearms and toolmark examiners as being so closely
8 knit as to be a cult?

9 A. I'd say they're certainly a clique. It's certainly a
10 clique.

11 Q. Is it correct that you have referred to them in
12 conversations with me as a cult?

13 A. I said "cult." But, if you remember, I said maybe that
14 was an ill-advised word.

15 Q. Okay.

16 A. It's interesting that you don't remember my
17 qualification in cross-examination.

18 Q. You referred to a study by a Jerry Miller during the
19 direct examination in which he described that-- If I understood
20 it correctly, and please correct me. You stated that in
21 Miller's study there were-- it determined that there were false
22 negatives in the-- Did I misunderstand that?

1 A. Yes. Miller found that there were false exclusions.
2 In other words, if you apply the CMS criterion rigorously, you
3 will get-- you won't get false positives. I don't know if this
4 was his 1998 paper. He's written many. I think this was a 2001
5 paper, which he did submit. But that you would get the 2001
6 paper, he used a variety of guns. The 2000-- In 1998, he only
7 looks at 10 P-Rugers. In the 2001 paper, he found that for a
8 variety of guns you would get only 2 percent in some cases; in
9 one case, zero percent of guns of-- Actually, he used lands and
10 grooves. --- of lands and grooves known to be from the same gun
11 satisfied the identification criteria. So that means that if
12 you followed CMS rigorously, you would not be able to use it to
13 make any identifications.

14 Q. So you're stating that in the 2001 paper by Miller in
15 terms of-- where in which he discuss the uses of-- the
16 conservative criteria, he did not find no erroneous
17 identifications could occur, although some actual
18 identifications would be excluded?

19 A. I'm talking about actual identifications being excluded
20 at the rate of not some but sometimes entirely. And I was
21 discussing the significance of that because to avoid actual
22 identifications being excluded, he advocated-- And you'll see
23 the same advocacy of the Neel and Wells paper you submitted.

1 --- that identifications be made by summing up the number of
2 striae on-- consecutively matching striae on all lands of the
3 gun. And my point was that he had never shown that you won't
4 get a false positive by summing up-- that the sum of all the
5 striae on the gun-- Excuse me. He has a threshold, right. For
6 one land, if you get-- if you're comparing two lands, right,
7 and if you get two consecutive groups of three striae or one
8 group of at least six consecutive striae, you can declare a
9 match. He says that will lead to no false positives. He has
10 that per land and groove. He never-- His study does not show
11 that if you took a gun with five lands and grooves, right, you
12 would never find that by summing up the numbers at all five
13 lands when they hit-- when they hit that number, you wouldn't
14 get a false positive.

15 Q. Do I also correctly understand one of your comments to
16 be that the criticism of the Toolmark and Firearms Examination
17 Committee was that there is not a-- we don't know what the
18 random match probabilities might be?

19 A. That's correct.

20 Q. Did the article that we were just discussing not in
21 fact state random match probabilities?

22 A. Neel and Miller, there are so-- I will go through the
23 mistakes they-- First of all they don't understand what a

1 random match probability is. A random match probability is done
2 instance by instance for an identification. They want one for
3 all identifications of all striated toolmarks. That's not how
4 it's done.

5 Number two, what they do is they aggregate apples and
6 oranges. They take studies of whether CMS works. You can't
7 aggregate the studies. Why? Because what different people
8 count as a striation-- the number of matching striations that
9 different people will count on a same object differed. So, in
10 other words, if you and I are taking turns tossing the coin, and
11 we have the same definition of heads or tails, we can aggregate
12 it in the study. But if I'm tossing the coin and I define heads
13 one way. And what I define as a head, you define as a tail, we
14 can't aggregate our studies. He doesn't take account of this.

15 The second thing he does, if you read the article
16 carefully, some of the studies are unpublished reports of
17 findings by graduate students in courses. If he was doing what
18 statisticians call a meta analysis, which he should have been
19 doing, he would have to determine how much weight to give to----

20 Q. And you say this based upon your expertise in the field
21 of statistics?

22 A. This is my-- Ask somebody who's read and carefully
23 analyzed. This is totally within my expertise. This is the

1 kind of analysis I have been doing since I published my first
2 article in 1973.

3 Q. What about the type of analysis that you discussed
4 during the testimony on direct, discussing the reasoning by
5 analogy between DNA science, fingerprinting science, and
6 toolmark and firearms examination. Is that the type of
7 comparison that is made by toolmark examiners, firearms
8 examiners-----

9 A. On my -----

10 Q. --- fingerprint examiners-----

11 A. --- expertise-- If you look at the-----

12 Q. --- or by DNA examiners?

13 A. If you look, it's made by DNA examiners all the time.
14 That's why they're horrified, the forensic identification
15 science. That comparison is essential to the NAS Study. The
16 NAS Study bases-- if you read the footnote, bases its comparison
17 of the differences between DNA and firearms and toolmark
18 identification on the article I published in *Columbia STLR*. You
19 will read articles on comparative bullet lead analysis that
20 refer to my article on firearms and toolmark identification.
21 Should you read my CV seriously, you would realize that I have
22 published stuff that has been cited on forensic DNA and on
23 fingerprints as well as on firearms and toolmarks.

1 Q. And speaking of where you've been published, is it
2 correct that-- I'm aware of the piece in the *Journal of*
3 *Forensic Sciences* where you wrote an opinion piece defending
4 your article in a law journal. I'm familiar with that one.

5 A. Well, I was----

6 Q. Are you----

7 A. I was replying to Mr. Nichols' criticisms of my article
8 and various other articles. That's right.

9 Q. Are there other science journals, ma'am, that you've
10 actually published in?

11 A. No, there are no other science journals I've actually
12 published in.

13 Q. But you've published in numerous legal journals?

14 A. I wouldn't say "numerous." I've published in a
15 handful. I would point out that it's not only that NAS Report;
16 it's also the Ballistic Imaging Report that cites my article.
17 And you will see, if you read the press release by the *American*
18 *Statistical Association* talking about why-- why error rates are
19 incorrectly needed, and my *Champion* article is cited there. So
20 I would say that you should take account of-- that my work has
21 been taken seriously by people who do statistics and do science.

22 Q. Ma'am, is it correct that in comparing DNA to firearms
23 and toolmark examinations, that-- that's an apples to apples

1 comparison because both sciences are examining unique
2 characteristics on the object that's being examined?

3 A. This is a central mistake that firearms and toolmark
4 examiners make. What they fail to recognize is Biasotti's study
5 and prior to that Gunther and Gunther recognizes a central
6 ambiguity in the notion of an individual characteristic.
7 Firearms and toolmark examiners call themselves pattern matchers
8 because what they're comparing, what's unique is a pattern of
9 microscopic marks. But the marks within the pattern are not
10 themselves unique to any tool. Now the problem with
11 identification arises, you can see it in Biasotti's very early
12 study that you get significant-- a large amount of similarity
13 between the striae composing the allegedly independent,
14 individual patterns in tools. For instance, 20-- 15 to 20
15 percent of the striae matched on Smith & Wesson revolvers known
16 to be fired from different guns. Now the thing gets worse
17 because you get a large amount of similarity between a small--
18 you get a large amount of difference between the patterns
19 created by the same tool. So his figure was 15 to 20 percent of
20 the striae matched on Smith & Wesson-- on bullets known to have
21 been fired by different Smith & Wesson revolvers, while only 21
22 to 38 percent matched on bullets fired from the same revolver.
23 So----

1 Q. Ma'am, if I may?

2 A. --- in other words----

3 Q. If I may? I don't mean to stop you, except that I
4 don't think that you're answering the question that I asked.

5 A. Yes, I am answering your question because the answer is
6 the component parts. Each individual's DNA is unique, but we
7 share a lot of the same alleles. And the question is how much
8 of each individual's DNA is unique? If you see "X" number of
9 matches on alleles, what is the likelihood that someone else
10 could have given it? Similarly, even if each-- even if
11 firearms and toolmarks are unique, which is the debatable, we
12 know that there's significant similarity between the--
13 component parts of the signatures that are allegedly unique. We
14 know the significant differences between the component parts--
15 I mean significant similarities between the component-- among
16 different patterns among the patterns created by different
17 tools, the component parts, and significant differences among
18 the patterns created by the same tools.

19 Q. And, ma'am----

20 A. So what we----

21 Q. --- isn't that correct that for that precise reason,
22 the use of percent matching in order to make comparisons or to
23 make identifications has been no longer used for decades?

1 A. It's been discarded, but the point is-- the underlying
2 point is when you say they're not similar because toolmarks are
3 unique; so is each person's DNA. The point is that the
4 component parts of neither signature are unique, and that's why
5 you have to ask and answer the random match probability
6 question. And that is not just my view, that is the view of the
7 2009 National Academy of Sciences Report.

8 Q. And that report details explicitly which study is
9 discussing a-- random match probabilities that they considered
10 that were authored by firearms and toolmark examiners that they
11 disregarded?

12 A. I-- They disregarded anyone who looks at that Neel and
13 Wells study. I began to tell you some of the problems were
14 disregarded. If you were teaching a freshman class in how not
15 to do a study, you might use that as the literature.

16 Q. Ma'am, my question was the NAS Report, did it-- did it
17 detail----

18 A. We don't know what they-- We do know-- I do know from
19 conversation----

20 Q. Well, let's talk about what we don't know. I was
21 interested-- That's what I was asking about. What is published
22 in the NAS Report as far as the random match probability studies

1 by toolmark and firearm examiners that they considered and
2 disregarded and why they disregarded them. Are there any?

3 A. There is-- There are no good random match probability
4 studies. This study by Neel and Wells doesn't even understand
5 what a random match probability is.

6 Q. Ma'am, I----

7 A. There cannot be such a study.

8 Q. Ma'am----

9 A. You know why?

10 Q. --- I'm asking about the report and whether it states
11 which of these studies they considered, actually read, and
12 disregarded and or-- if you can explain why they-- why they
13 were disregarding them. Did it-- Just start with-- I'll go
14 with you. Did it name any? Did it list them?

15 A. It listed studies. If you look at the footnote that
16 deals with my articles, it listed studies that were an attempt
17 to set firearms and toolmark identification on a statistical
18 basis.

19 Q. I recall a 60-- was it 58 or 68 capsule summaries that
20 they received that were published by a second source. I was----

21 A. This----

22 Q. --- wondering if-- was it-- Is that the only
23 footnote, the only documentation----

1 A. No. Excuse me. First of all, you're confusing things.
2 The study they're talking about is a-- is a uniqueness study,
3 it's a validation study, it's not a random match probability
4 study.

5 Q. So there are no random----

6 A. With regard-----

7 Q. --- match probability studies-----

8 A. No, I-----

9 Q. --- that they cited?

10 A. If you look at-- There is another footnote that cites
11 about seven articles, including my own, as indicating that some
12 approach has been made to developing statistical foundations,
13 but it is not widely accepted within the profession.

14 Q. And, ma'am, is it correct that the NAS Report, as we
15 examined it yesterday, showed that there was one firearms and
16 toolmark examiner who was invited to testify, and he testified
17 along with someone else from a different discipline during a
18 1-hour period?

19 A. People will tell you they conducted this work as things
20 are conducted. These are academic scholars-----

21 Q. Right.

22 A. --- every-- They read-- They are not little book
23 report writers. They don't have to list everything that they

1 read. I'm sure in a good academic practice they would not have
2 listed things that they thought were not worth the paper they
3 were written on. They read what was submitted to them. It was
4 an open submission process. As John Collins, who is now head of
5 the ASCLD, testified in Cleveland in State versus Hudson in
6 February-- You can get the transcript. He, as a firearms
7 examiner, would have been perfectly free to submit whatever
8 literature from whatever studies he thought the committee should
9 have read.

10 Q. So was that a yes?

11 A. Excuse me? Two people testified.

12 Q. The question was in the discussion of firearms
13 examination, there was one person who was called as firearms
14 examiner who testified during a 1-hour block period along with
15 another examiner from a different forensic science discipline.

16 A. Yes.

17 Q. Thank you.

18 A. I was explaining the procedure of the committee to you.

19 Q. Thank you.

20 A. You're welcome.

21 Q. I understand that you believe that the criticism of
22 firearms and toolmark examination is-- both the studies are not

1 double-blind as well as the examinations conducted in the field
2 by examiners are also not double-blind.

3 Is that correct?

4 A. Well, you can't have double-blind-- Well, yes, in a
5 way, yeah. Look what happens. When a firearms examiner gets a
6 weapon to examine and gets a bullet or cartridge case, it
7 typically comes from a detective. Very often, and I read lots
8 of these reports, you get an identification where it says, "Gun
9 recovered from suspect's house. See if you can link it to
10 bullets at crime scene." That's not blind. They know what the
11 situation is. It reaches and-- So people know, they're never
12 handed-- They are never handed as Judge Johnston-- Johnson
13 recognized in Taylor; as Judge Gertner recognized, that what
14 they do is akin to a show-up. They are given one gun to
15 examine. They are given some bullets, all of which are believed
16 to come from the same gun, and they are asked, "Can you identify
17 these bullets as coming from the gun?" In cases where a gun is
18 not recovered, and they think several incidents are related,
19 they say-- they will get something like, "Suspect believed to
20 also have been responsible for 'X' murder. Can you link them
21 up?"

22 Q. So, if I understand it correctly, the failure to use
23 double-blind procedures during the studies and so forth means

1 that we cannot correctly calculate what the error rates are for
2 these examiners in the performance of their duties?

3 A. Well, there are many, many reasons you can't, double-
4 blindness is one. It's also that the exams----

5 Q. And----

6 A. --- are far simpler than they encounter in actual
7 casework.

8 Q. And that is the basis for your opinion that the field
9 as a whole is too unreliable for it to be considered.

10 Is that correct?

11 A. No. There are three bases. They don't arrive at
12 random match probabilities. I guess four. They don't have--
13 It's all to the mind's eye. And the real point, I guess, the
14 bottom line is they expect examiners to disagree, as Mr. Nichols
15 and Grzybowski have written. And when examiners disagree, they
16 don't know who's right; and, therefore, they can't calculate an
17 actual error rate. That's not knowledge; that taste. When Mr.
18 Nichols writes that East Coast and West-- And what is
19 considered by firearms examiners, the leading defense of their
20 field. When he writes that East Coast and West Coast examiners
21 use different training materials and are therefore likely to
22 differ about identification calls, and they can't tell who.
23 Those of us who's traveled to countries, who've had blood tests

1 with international standards where they can come back and people
2 in New York can review a report from Provinz, Québec, and it's
3 not different training and experience, you know, the blood tests
4 was run right. It sort of-- You get a test and you're told,
5 well, you know, East Coast examiners might look at it one way;
6 West Coast might look at it another way. They have different
7 training. That's fine if we have different taste in ice cream
8 because we've grown up tasting different things. It's not
9 knowledge to say we expect people to differ, we don't know who
10 is right. And it's not knowledge. It's not helpful to the
11 trier of fact when Mr. Nichols writes, "It's not a problem that
12 we disagree and had no standard for telling who's right because
13 a jury can decide." If the jury is better than firearms and
14 toolmark examiners at deciding who's right when they disagree,
15 why are they experts?

16 Q. And is it correct, ma'am, that since there is this
17 issue out there, would you agree that there are-- there's more
18 than one way to improve the reliability of an examination? For
19 example, having another examiner conduct an examination on the
20 same evidence? Would you agree that's more or less----

21 A. Well, I would disagree----

22 Q. --- reliable?

1 A. --- with that because if the discipline itself lacks
2 foundations and people are doing something, it's like having two
3 flat earthers [sic] agree, would that make you more confident
4 that the earth was flat? People agreed about CBLA. There were
5 a lot of very, very, very big deal scientists who were betting
6 their money that-- that, um, that a-- certain kinds of
7 databases needn't be built, couldn't be built; and then they
8 were built after the 1992 NRC Report. No, we don't just say two
9 people agree, we don't have scientific foundations but it's fine
10 because people-- people agree.

11 Q. But, ma'am, isn't it correct that you in your
12 literature has criticized labs that don't use multiple
13 examinations of the same evidence by different examiners using
14 blindly? Isn't that precisely because the work that each
15 examiner is doing does actually have some value added?

16 A. No. What I have done in my writing is distinguished
17 between two levels, and list the courts with Daubert and with
18 Frye in most states. One is, is the field itself reliable or
19 generally accepted within the relevant scientific community
20 which I have written is not firearms and toolmark examiners
21 based on case law that says, look, if you want to find out how
22 the polygraphs work; don't ask paleographers.

23 Q. And that means----

1 A. It's foregoing conclusion.

2 Q. So, to your mind then, it doesn't matter that Jerry
3 Miller conducted the validation of the particular study in
4 question here and that he did so blindly, not knowing what
5 results Mrs. Sevigny had reached?

6 A. Well, I was going-- Well, first of all, Jerry Miller's
7 review doesn't matter because of the way it was conducted. All
8 we have is his stamped name. He is saying, "Trust me. I
9 reviewed it." That's not the way science is done. The basis of
10 science is the report of observations that can be verified--
11 "Verified" is bad language. --- that can be-- that you can
12 repeat the same procedures and get the same results. The
13 trouble with----

14 Q. Do I understand then----

15 A. --- the other lab work here. Mrs. Sevigny tells us she
16 made multiple test fires. Where is the evidence of that? The
17 only picture is "T1." Mrs. Sevigny tells us she ruled out
18 subclass characteristics. Where is the evidence of that? She's
19 saying, "Trust me." Mrs. Sevigny says, "Well, I could have used
20 CMS and gotten my result." When asked, she says, "Well, of
21 course, I could have done it, but I didn't indicate it." Come
22 on. That's not science.

23 [The civilian defense counsel examined the document.]

1 Q. Ma'am, do I understand correctly, that you received and
2 reviewed the firearms report prepared by Mrs. Sevigny in this
3 court-- in this case?

4 A. Yes, I did.

5 TC: I don't know if the whole thing has been previously
6 marked. We can actually probably do just the one page for our
7 purposes.

8 Q. Ma'am, while that's being marked, you reviewed the
9 report, but you did previously state that you are not a trained
10 and qualified firearms examiner? Isn't that right?

11 [The court reporter marked the document as Appellate
12 Exhibit XXV.]

13 A. I am not a trained and qualified firearms examiner.

14 Q. And is it correct----

15 A. But I have read----

16 Q. --- that as a result of that, we may not anticipate
17 that you correctly interpret and understand all of the markings
18 and the notations contained in the report?

19 A. [Paused.] I have considerable experience reading
20 reports.

21 Q. Ma'am, is-- I'll restate the question. Is it possible
22 that because you are not a trained and qualified firearms

1 examiner that you misunderstand or do not fully recognize the
2 various notations contained within Mrs. Sevigny's report?

3 CDC: Objection. Compound, argumentative, repetitive,
4 unnecessarily insulting to the witness.

5 MJ: Objection sustained. The court can take into
6 consideration that it's possible that anybody might not
7 understand the interpretation of a report.

8 [The trial counsel retrieved Appellate Exhibit XXV from the
9 court reporter.]

10 **[The trial counsel continued examination of the witness as**
11 **follows:]**

12 Q. Ma'am, I'm showing you a document that's been marked
13 Appellate Exhibit XXV. I call your attention to this line
14 [pointing to exhibit] where it says "test fired."

15 A. [Examined AE XXV.] We did not get this sheet. We did
16 not get this sheet. May----

17 Q. Well, that's something that we can take up in another
18 forum, but my question to you is----

19 A. But it does say "test fires." I will also say, though,
20 okay-- That's not there. Show me where she gives an indication
21 of whether she looked at breechface marks or firing pin
22 impressions?

23 TC: I'm taking the document back from the witness and----

1 WIT: Show me where----

2 TC: --- returning it to the court reporter.

3 WIT: --- she gives an indication to what she testified to?
4 She testified she didn't. She said, "Oh, it would have
5 satisfied the CMS criterion. Show me where she documented that?

6 Q. And, ma'am, to go back to the line of questioning that
7 we were on, is it correct that in your view it doesn't matter--
8 I think you said-- I think you answered. I apologize. The
9 answer in between is long. You said it doesn't matter that
10 Jerry Miller had conducted the review and found the same
11 conclusions based on a blind test?

12 A. Hold on. Let me distinguish two levels. One level
13 is-- is the field per se reliable and whether the field per se
14 is reliability has nothing to do if the review is constructive.
15 The second----

16 Q. Would you then therefore----

17 A. --- is----

18 Q. --- conclude that because of that, it doesn't----

19 A. --- the ----

20 Q. --- it doesn't matter to you whether----

21 MJ: Hold on just a second, Captain Hanson, if you would
22 allow the witness to finish answering the question. This is the

1 second time she's tried to go into the two areas. We've only
2 gotten through the one.

3 TC: I'm sorry, ma'am.

4 MJ: Allow her to go to the second.

5 **[The trial counsel continued examination of the witness as**
6 **follows:]**

7 A. The second is even if the field per se is reliable; did
8 the documentation and peer-review procedures conform to the
9 standards of the field? You will see most recently published by
10 Budowle, Steve Bunch et al in *Journal of Forensic Sciences*--
11 Scratch that. You will see that what supposed to be done by a
12 peer-reviewer, it's done in very few labs, it is done in LAPD,
13 is that if it's a blind review, how do we know it's a blind
14 review? How do we know what he did? Mrs. Sevigny said he
15 looked under the photo-- the comparison microscope, but he
16 didn't take any notes. Well, the standard procedure is to take
17 notes. And one reason one takes notes in any field is having to
18 note things down forces one to get clearer about what-- just
19 what one sees and describe it to somebody else. And, also, if
20 we're to believe-- if an outside assessor is to have confidence
21 that there was blind peer-review, you're asking the outside
22 assessor to say Jerry, Neel, and Miller and, whoop, [motioning
23 with hand] Mrs. Sevigny says it was blind peer-review, he must

1 have done a thorough job. We don't know. This is not standard
2 labs differ. This was one of the objections. Actually, labs
3 don't differ with DNA. With forensic DNA labs you see the same
4 sort of documentation lab after lab after lab. You don't see
5 the same thing. But you do see labs like LAPD where you know
6 exactly what-- They usually use two peer-reviewers. You get
7 separate diagrams from each. You know exactly what they saw,
8 and we don't have that here.

9 Q. And what was the third thing, ma'am?

10 A. Oh, I think we are now back to my criticisms of the
11 field. I mean, we had a question-- I mean, I was
12 distinguishing two levels here, right?

13 Q. Huh-huh. I beg your pardon. I had misunderstood. I
14 thought in response to another question, you had stated that
15 there were three separate things, and that we had just gone
16 through one of them; that was the second, and the third one
17 was----

18 A. No. No.

19 MJ: No, counsel, this is the response to your question
20 about Jerry Miller. She was explaining why she found that
21 article unreliable and it was on two bases. It was based on the
22 fact that you had to analyze it under two analyses: One is the

1 field reliable; and, even if it is, how do you know there was an
2 adequate peer-review?

3 **[The trial counsel continued examination of the witness as**
4 **follows:]**

5 Q. And, do I correctly understand then that no matter how
6 many examinations are done of a particular piece of evidence,
7 because the field is unreliable, the repeated answers by people
8 giving the same answer doesn't improve or change the likelihood
9 that that examination is done correctly?

10 A. The bottom line is this. This is a statistical
11 determination. This is to practical impossibilities, the
12 statistical language. It's very, very, very unlikely that any,
13 other tool can note-- make that mark. We know a lot about the
14 logic of forensic identification claims, courtesy of all we
15 learned through DNA and through the struggles to get it in the
16 courtroom. And what we know is you cannot make an
17 identification claim unless you do four things.

18 You specify the component marks you're relying on. You
19 measure them so you see differences, sources of variability.
20 You build relevant and representative databases so that you can
21 assess the frequency of particular marks. And then to get a
22 frequency for the whole component that's-- to see whether it's
23 alleged-- what the likelihood that it could-- two could come

1 from a different source, then you have to deal with statistical
2 independence.

3 And those things sound strange when you talk about firearms
4 and toolmark identification because these people haven't even
5 tried to do any of it.

6 Q. Ma'am, I understand that you reviewed Mrs. Sevigny's
7 Lab report in preparation for testifying today. Is it the only
8 lab report relative to the examination of this gun and this
9 bullet cartridge casing that you've done?

10 A. Wait. Is it only-- the only one I've done? I don't
11 do the----

12 Q. I'm sorry.

13 A. --- the report.

14 Q. I apologize. I phrased it poorly. Is that the only
15 lab report of an examination of this gun and this cartridge
16 casing that you reviewed in preparation for your testimony?

17 A. No, it is not.

18 Q. Did you also review the lab report prepared by Mr. Bob
19 Poole?

20 A. Yes, I did.

21 Q. And is Mr. Bob Poole, the defense's firearms
22 examination expert in this case?

23 A. Yes, he is, so far as I know.

1 Q. And did you, upon reviewing Mr. Bob Poole's report, see
2 that he reached the same conclusion as Mrs. Sevigny and Mr.
3 Jerry Miller?

4 A. I don't-- Yes, I do.

5 Q. And is it correct that based upon your criticisms of
6 the field, that that congruence changes nothing about the
7 reliability of these findings?

8 A. That congruence changes nothing about the reliability
9 of the field because nobody was working from a defined protocol
10 based on the requisite statistical empirical foundations.

11 TC: Thank you, ma'am.

12 Your Honor, I have no further questions.

13 MJ: Redirect?

14 CDC: Thank you, Your Honor.

15 **REDIRECT EXAMINATION**

16 **Questions by the civilian defense counsel:**

17 Q. Doctor [sic] Schwartz, you were asked at one point
18 about reports and studies that were-- for want of a better
19 word, discounted by the forensic science-- the forensic science
20 study. I believe you would have been referring to Footnote 63
21 on page 154. But let me hand you----

22 CDC: Can I do this without putting it in the record, Your
23 Honor?

1 MJ: Yes, you do.

2 CDC: With the indulgence of the court and my opponent, I'm
3 going to read and ask you if that's what you were referring to.

4 **[The civilian defense counsel continued examination of the**
5 **witness as follows:]**

6 Q. Does this sound like what you were referring to:
7 "Recent research has attempted to develop a statistical
8 foundation for assessing the likelihood that more than one tool
9 could have made specific marks by assessing consecutive
10 marching-- matching striae, but this approach is used in a
11 minority of cases"?

12 A. [Nodding head.]

13 CDC: An affirmative nod from the witness.

14 Q. And that talked about several reports, including
15 Biasotti, Murdock, Miller, McClain, Mason, as well as citing
16 your own article in 2004/2005, correct?

17 A. Yeah.

18 Q. Also, in Nichols in 2007, and your response in the
19 *Journal of Forensic Sciences*?

20 A. I don't believe my response was cited. That's the
21 article I responded to, but I don't believe my response was
22 cited.

1 CDC: You are correct. I misread it. I read for a
2 rebuttal to this critique and then I jumped ahead to your
3 article. I apologize, ma'am.

4 For the record, that's on page 154, Footnote 63 of the
5 bound copy from the *National Academies Press*.

6 Q. Ma'am, you were asked several questions by the
7 government about your review of Mrs. Sevigny's evaluation in
8 this case. Is it a fair summary to say you believe it suffers
9 from the same defects as all the studies in firearm and tool
10 identification?

11 A. Well it suffers from the same defects in the sense that
12 if you look at----

13 Q. The level one defects?

14 A. She hasn't defined what marks are the bases for her
15 identification. You can't tell what her criterion for
16 identification is. And then she suffers from-- She hasn't done
17 a lot of the basic, basic things. She doesn't indicate what
18 marks she relied on. The pictures of the injector port marks--
19 The standard marks are the only marks that can justify a
20 conclusion that a bullet was-- that a cartridge case was fired
21 as opposed to worked through a particular gun or breechface
22 marks and firing pin impressions. So her identification to an

1 injector port at most shows that it was worked through that gun.
2 It doesn't show it was fired.

3 Q. Ma'am, aside from that, which may get to the technical
4 area, which may be beyond your expertise, let's-- You heard her
5 testify that she did find other minor marks on other areas than
6 the injector port but didn't use them. Does that bother you as
7 a scientist that there are other marks that are disregarded?

8 A. Well, yes, it does.

9 TC: Your Honor, I beg your pardon. If I heard it
10 correctly, I understood that the question was-- Did we just
11 qualify her as a scientist? I apologize if I misheard the
12 question.

13 CDC: I'll rephrase.

14 **[The civilian defense counsel continued examination of the**
15 **witness as follows:]**

16 Q. Does that failure to take account of other marks which
17 don't provide identification matching, based on the testimony,
18 confirm part of your criticism of the field?

19 A. Yes, it does. In particular, what she said, if I heard
20 her testify, it wasn't just that some marks were insignificant,
21 that there was too little there; she suggested that some of the
22 marks didn't justify a match. Now the field has this bias, and
23 you can read it in the literature, that we are looking to find a

1 match. You can read it in the SOPs that these illustrate. It
2 says if you don't find a match, look again, consider whether you
3 didn't find it because of X, Y, and Z. That would be fine if
4 they'd also said analogously, if you do find a match, consider
5 whether you would have done X, Y, and Z. But it just says be
6 careful if you didn't find a match. And here it is a bias,
7 right; she finds some marks that don't justify a match. She
8 doesn't consider-- or if she considered, one would like in a
9 full record to see all the marks she considered; to have
10 photomicrographs, diagrams, clear and narrative descriptions of
11 what she found, they were or were not sufficient to lead to a
12 conclusion or why. And so if she'd done that-- And this is
13 what the NAS Report advocates, and this is what the
14 standardization of documentation comparison that the AFTE came
15 out with in 2005 advocates. People should be able to go through
16 a lab report and see step by step what the examiner did and why
17 she did it. Where is-- Essentially, what she's doing is
18 saying, "Here's my bottom line. Trust me. I'm a well-trained
19 and experienced examiner."

20 CDC: Thank you, Your Honor. No further questions, Your
21 Honor.

22 MJ: Recross?

23 TC: One question.

1 **RECROSS-EXAMINATION**

2 **Questions by the trial counsel:**

3 Q. Ma'am, on that last answer characterizing the report;
4 that's your opinion of the report based upon your status as a
5 lay witness as it would apply to firearms and toolmark
6 examination, because you are not a qualified firearms and
7 toolmark examiner, is that correct?

8 A. I would say it's my opinion based on the literature in
9 firearms and toolmark examination. The standardization of
10 comparison document, she doesn't meet. Her report does not
11 conform to what's required in the SOPs. Specifically, the SOPs
12 that apply to her said you should indicate and describe the
13 breechface and the firing pin. She didn't. You would say it's
14 based on Bruce Moran's article on photo documentation of
15 evidence, AFTE Journal cited by Judge Saris in Monteiro. And I
16 would say that it is based on-- I believe it's Chapter 6 of the
17 NAS 2009 Report which deplored the summary nature of reports in
18 forensic science and said they should be written so that what
19 was done-- so that you had a step by step account. And this
20 was a criticism also by a separate National Academy of Sciences
21 Committee in 2008 of the Ballistic Imaging Report, also
22 criticized the lack of documentation. And from my experience I
23 should-- I would say the documentation here is not as bad as

1 some I've seen but it's certainly with charity, maybe, she's in
2 the top 33 percent. I mean the top 33 from the bottom. You
3 know, she gets a 33 percentage compared to other reports I've
4 seen.

5 Q. And this is apparently based upon not a full review of
6 her lab report, is that correct?

7 A. I reviewed whatever the government gave me. It was
8 represented to me that I got the full report. It was
9 represented to counsel that he got the full report.

10 TC: Thank you.

11 MJ: Mr. Court?

12 **REDIRECT-EXAMINATION**

13 **Questions by the civilian defense counsel:**

14 Q. You made reference, ma'am, to Chapter 6 of the report
15 we referred to before dealing with reporting results, and that
16 some-- indicating some forensic laboratory reports meet a
17 standard of reporting but most do not, those kinds of comments?

18 A. Right.

19 Q. Again, to try to save paper, were you referring to
20 lines such as found on page 186 of the previously cited edition:
21 "As a general matter, laboratory reports generated as a result
22 of a scientific analysis should be complete and thorough; they
23 should describe, at a minimum, methods and materials,

1 procedures, results and conclusions; they should identify, as
2 appropriate, sources of uncertainty in the procedures and the
3 inclusions along with estimates of their scale to indicate the
4 confidence level of the results, although not appropriate and
5 practical to provide as much detail-- although it is not
6 appropriate and practical to provide as much detail as might be
7 expected in a research paper. Sufficient conduct should be
8 provided to allow the non-scientist reader to understand what
9 has been done and permit informed, unbiased scrutiny of the
10 conclusion." Is that the type of language you were referring
11 to?

12 A. That was the language I was referring to. Yes.

13 CDC: Thank you. No further questions.

14 MJ: Government, anything further?

15 TC: No, Your Honor.

16 MJ: May this witness be excused temporarily or
17 permanently?

18 CDC: Temporarily, please, Your Honor.

19 [The witness was duly warned, temporarily excused, and
20 resumed her seat at counsel table.]

21 MJ: Mr. Court, do you have any further witnesses or
22 evidence for this motion?

23 CDC: No, Your Honor.