

INTERFACING YOUR ACCUSER: COMPUTERIZED EVIDENCE AND THE CONFRONTATION CLAUSE FOLLOWING *MELENDEZ-DIAZ*

INTRODUCTION

“In all criminal prosecutions, the accused shall enjoy the right . . . to be confronted with the witnesses against him”¹ As the U.S. Supreme Court has recognized, this right was enshrined in the Constitution to protect Americans against the sort of *ex parte* prosecutions that characterized previous abuses of power, such as the infamous Raleigh trial or the tyrannical reign of Queen Mary I, whose actions earned her the nickname “Bloody Mary.”² Such practices were also one of the abuses complained of by the American colonists in the years leading up to the American Revolution.³ Later, when the U.S. Constitution was ratified, Congress was obliged to include the Confrontation Clause in the Sixth Amendment to satisfy antifederalist concerns that the lack of such a provision might turn our constitutional regime into a tyranny.⁴

The Supreme Court has long held that the Confrontation Clause guarantees defendants a right to confront their accusers “face to face.”⁵ But what if that accuser has no face? Increasingly, computers have been recognized not merely as repositories of data, but also as sources of potentially incriminating “statements.”⁶ Several courts have held that

¹ U.S. CONST. amend. VI.

² *Crawford v. Washington*, 541 U.S. 36, 43–44 (2004) (citing 1 J. STEPHEN, HISTORY OF THE CRIMINAL LAW OF ENGLAND 326 (1883); An Act Appointing an Order to Justice of the Peace for the Bailment of Prisoners, 1 & 2 Phil. & M. c.13 (1554); An Act to Take the Examination of Prisoners Suspected of Manslaughter or Felony, 2 & 3 Phil. & M. c.10 (1555); 1 DAVID JARDINE, CRIMINAL TRIALS 435, 520 (1832); Trial of Sir Walter Raleigh, in 2 T.B. HOWELL, STATE TRIALS 15–16 (1603)).

³ *Id.* at 47–48 (citing J. LIGHTFOOT ET AL., *A Memorial Concerning the Maladministrations of His Excellency Francis Nicholson*, in 9 ENGLISH HISTORICAL DOCUMENTS 253, 257 (David C. Douglas ed., 1955); John Adams, Draft of His Argument in *Sewell v. Hancock* (Oct. 1768–Mar. 1769), in 2 LEGAL PAPERS OF JOHN ADAMS 194, 207 (L. Kinvin Wroth & Hiller B. Zobel eds., 1965)).

⁴ *Id.* at 48–49 (citing Objection of Abraham Holmes to Omission of Guaranteed Right of Confrontation (Jan. 30, 1787), in 2 DEBATES IN THE SEVERAL STATES ON THE ADOPTION OF THE FEDERAL CONSTITUTION 110–11 (Jonathan Elliot ed., 2d ed. 1836); R. LEE, LETTER IV BY THE FEDERAL FARMER (Oct. 15, 1787), reprinted in 1 THE BILL OF RIGHTS: A DOCUMENTARY HISTORY 469, 473 (B. Schwartz ed., 1971)).

⁵ *Id.* at 57 (quoting *Mattox v. United States*, 156 U.S. 237, 244 (1895)).

⁶ *E.g.*, *United States v. Washington*, 498 F.3d 225, 230 (4th Cir. 2007), *cert. denied*, 129 S. Ct. 2856 (2009) (holding that computer-run blood-alcohol analysis does not implicate the Confrontation Clause because the machine-generated data is not a “statement” of any person and therefore cannot be testimonial).

because machines are not “persons,” nothing they “say” can truly constitute a testimonial “statement” for purposes of the Confrontation Clause.⁷ Nonetheless, most computers’ outputs are not wholly automatic. Often, what comes out of a computer is dependent upon what is fed into it by a technician.⁸ The purported objectivity of the process does not exempt it from confrontation: the Supreme Court recently held that “neutral” lab reports implicate the Confrontation Clause.⁹ The question thus becomes: When do statements by machines cease to be statements of the machines themselves, and instead become the statements of their operators? At what point does man overtake machine? And when the machines’ statements do cease to be the machines’ alone, who then must testify to the result? Such questions must be addressed carefully for they bring with them the danger of, on the one hand, greatly inflating the costs of law enforcement¹⁰ or, on the other hand, failing to sufficiently protect one of the most ancient and fundamental human rights.¹¹ This Note argues that, when dealing with mechanized evidence, the Confrontation Clause requires testimony from the one whose intelligence and reasoning produced the conclusion, as long as this entity was an actual person and not merely a machine.

Part I of this Note provides an overview of the evolution of the Supreme Court’s current test for determining what constitutes a “testimonial” statement, concluding with a brief analysis of the current state of the law following *Melendez-Diaz v. Massachusetts*.¹²

Part II of this Note addresses the question of when computerized evidence is testimonial by analyzing the threshold question of when such evidence is a “statement” at all, as any computerized evidence that does not constitute a “statement” cannot, by definition, implicate the

⁷ *Id.* at 231 (citing 4 MUELLER & KIRKPATRICK, FEDERAL EVIDENCE § 380 (2d ed. 1994) (stating that because machines are not declarants, “nothing ‘said’ by a machine . . . is hearsay”)) (collecting cases, and applying the hearsay concept of “statements” to the Confrontation Clause).

⁸ *E.g., id.* at 232–33 (Michael, J., dissenting).

⁹ *Melendez-Diaz v. Massachusetts*, 129 S. Ct. 2527, 2532, 2536 (2009).

¹⁰ *See id.* at 2549–50 (Kennedy, J., dissenting); *see also* Brief for the State of Indiana, et al. as Amici Curiae Supporting Respondent at 6–11, *Briscoe v. Virginia*, 130 S. Ct. 1316 (2010) (No. 07-11191) (discussing the cost of implementing *Melendez-Diaz*); Tim McGlone, *High Court Ruling Throws Sand into Wheels of Justice*, VIRGINIAN-PILOT, Jan. 9, 2010 at 1, 10 (same).

¹¹ *See Crawford v. Washington*, 541 U.S. 36, 43–50 (2004) (tracing the origins and history of the right of confrontation from Roman law to the founding of the United States); *see also Deuteronomy 17:7, Matthew 18:15–16, Acts 25:16* (declaring a confrontation right under ancient Hebrew, Christian, and Roman law, respectively).

¹² 129 S. Ct. 2527 (2009).

Confrontation Clause.¹³ For this discussion, it will be helpful to draw on existing analyses as to when computerized evidence constitutes a statement, although most such analyses have been done in the context of the hearsay rule.

When computerized data does implicate the Confrontation Clause, there is some debate as to who must testify to the computer's output. Part III of this Note addresses the question of who may testify to admit the results of computer-aided analysis in the wake of the Supreme Court's decision in *Melendez-Diaz*. This section discusses attempts to admit the final printout into evidence and attempts by experts to use the computerized data as a basis for their opinions. In the months following *Melendez-Diaz*, the lower courts adopted a variety of approaches in applying the holding of that case.¹⁴ Part III discusses those approaches and proposes a coherent test for determining whose testimony is sufficient to meet the prosecution's Confrontation Clause obligations.

I. DEFINING "TESTIMONIAL": THE ROAD TO *MELENDEZ-DIAZ*

The current interpretation of the Confrontation Clause was first formulated in a concurrence by Justice Thomas in *White v. Illinois*.¹⁵ In *White*, the majority held that the Confrontation Clause is not implicated by statements that "c[o]me within an established exception to the hearsay rule."¹⁶ Though the Court made it clear that it was not rendering the Confrontation Clause redundant with the hearsay rule,¹⁷ it did base its Confrontation Clause analysis on the notion that the Confrontation Clause and the hearsay rule "are generally designed to protect similar values."¹⁸ In that case, the United States, as amicus curiae, had argued that the analysis of a statement under the

¹³ See, e.g., *Davis v. Washington*, 547 U.S. 813, 821 (2006) ("Only [testimonial] statements . . . cause the declarant to be a 'witness' within the meaning of the Confrontation Clause." (emphasis added) (citing *Crawford*, 541 U.S. at 51)).

¹⁴ See *People v. Gutierrez*, 99 Cal. Rptr. 3d 369, 376–377 n.3 (Ct. App. 2009) (discussing the various attempts by the California appellate courts to reassess state precedent in light of *Melendez-Diaz*), *review granted, depublished by* 220 P.3d 239 (Cal. 2009). Compare *State v. Mobley*, 684 S.E.2d 508, 511 (N.C. Ct. App. 2009) (permitting an expert to testify as to the results of tests performed by others as long as she provides her own criticisms of those results based on her own interpretation of the data), *review denied*, 692 S.E.2d 393 (N.C. 2010), with *State v. Willis*, 213 P.3d 1286, 1288–89 (Or. Ct. App. 2009) (holding that both the Oregon constitution and the U.S. Constitution require testimony by the report's author (citing *State v. Birchfield*, 157 P.3d 216, 220 (Or. 2007)), *rev'd on other grounds*, 236 P.3d 714 (Or. 2010), and *Shiver v. State*, 900 So. 2d 615, 618 (Fla. Dist. Ct. App. 2005) (holding that testimony by report's author did not satisfy the Confrontation Clause when the work the report was based on was done by another).

¹⁵ 502 U.S. 346, 358 (1992) (Thomas, J., concurring).

¹⁶ *Id.* at 353.

¹⁷ *Id.* at 352 (quoting *Idaho v. Wright*, 497 U.S. 805, 814 (1990)).

¹⁸ *Id.* at 352–53 (quoting *California v. Green*, 399 U.S. 149, 155 (1970)).

Confrontation Clause should be based upon its similarity to the *ex parte* affidavits that the Clause was intended to prevent, but the Court held that that argument came “too late in the day to warrant reexamination of th[e] [existing] approach.”¹⁹

Justice Thomas, joined by Justice Scalia, argued that the Court should have accepted the United States’ approach.²⁰ Lacking dispositive guidance from the text itself,²¹ Justice Thomas examined the abuses that the Confrontation Clause was intended to prevent. Justice Thomas noted that in 16th-century England, interrogations were commonly held prior to trial, out of the presence of the defendant.²² He further rejected the Court’s then-established principle that the Confrontation Clause does not apply to hearsay that bears “particularized guarantees of trustworthiness[]” including, but not limited to, those falling under a “firmly rooted” hearsay exception.²³ Instead, Justice Thomas proposed that, in addition to witnesses “who actually testif[y] at trial,” the Confrontation Clause applies to “extrajudicial statements only insofar as they are contained in formalized testimonial materials, such as affidavits, depositions, prior testimony or confessions.”²⁴ To Justice Thomas, this view would both prevent the abuses that the Confrontation Clause was designed to prevent and be consistent with the “vast majority” of Supreme Court precedent.²⁵

Although Justice Thomas’s opinion garnered only two votes, it was destined to become the law of the land. Twelve years later, in *Crawford v. Washington*, Justices Thomas and Scalia were able to convert three justices, and also persuade two new justices who had been appointed in the interim, to their view of the Confrontation Clause, reversing the majority in *White*.²⁶ In his majority opinion, Justice Scalia reprised and extended the historical discussion found in Justice Thomas’s concurrence in *White*,²⁷ coupling it with his own textual analysis, as follows: The Confrontation Clause guarantees defendants a right to be confronted with the “witnesses” against them.²⁸ The term “witnesses” is defined as

¹⁹ *Id.* at 353.

²⁰ *Id.* at 358 (Thomas, J., concurring).

²¹ *Id.* at 359.

²² *Id.* at 361 (quoting 1 J. STEPHEN, *supra* note 2, at 221).

²³ *Id.* at 363 (quoting *Ohio v. Roberts*, 448 U.S. 56, 66 (1980)).

²⁴ *Id.* at 365.

²⁵ *Id.*

²⁶ Compare *White*, 502 U.S. 346, 352–53 (1992) (a 7-2 decision with Justices Scalia and Thomas dissenting) with *Crawford v. Washington*, 541 U.S. 36, 61 (2004) (a 7-2 decision with Justices Scalia and Thomas in the majority).

²⁷ *Crawford*, 541 U.S. at 43–50.

²⁸ *Id.* at 51.

“those who ‘bear testimony.’”²⁹ Therefore, defendants have a right to be confronted with anyone who “bear[s] testimony” against them.³⁰

Justice Scalia then determined that “testimony” refers to “[a] solemn declaration or affirmation made for the purpose of establishing or proving some fact,”³¹ and proceeded to list three more detailed definitions of “testimony” that had come to the Court’s attention:

(1) “*ex parte* in-court testimony or its functional equivalent—that is, material such as affidavits, custodial examinations, prior testimony that the defendant was unable to cross-examine, or similar pretrial statements that declarants would reasonably expect to be used prosecutorially”;³²

(2) “extrajudicial statements . . . contained in formalized testimonial materials, such as affidavits, depositions, prior testimony, or confessions”;³³ and

(3) “statements that were made under circumstances which would lead an objective witness reasonably to believe that the statement would be available for use at a later trial.”³⁴

Justice Scalia declined to choose among these definitions, holding that the application of any of the three would result in the same outcome in the current case,³⁵ a decision that would cause quite a bit of confusion in the years to come.³⁶ His majority opinion also overturned the “indicia of reliability” exception, holding that the only exception to the general right of confrontation is when the witness is “unavailable to testify, and the defendant ha[s] had . . . a prior opportunity for cross-examination.”³⁷

Two years after their triumph in *Crawford*, the Scalia-Thomas alliance developed a small rift. That year, the Court granted certiorari in a pair of Confrontation Clause cases requiring a more precise definition of “testimonial.”³⁸ These cases were consolidated by the Court as *Davis v.*

²⁹ *Id.* (citing 2 NOAH WEBSTER, AN AMERICAN DICTIONARY OF THE ENGLISH LANGUAGE 114 (1828)).

³⁰ *See id.* at 53 (concluding that “even if the Sixth Amendment is not solely concerned with testimonial hearsay, that is its primary object”).

³¹ *Id.* at 51 (alteration in original) (citing 2 WEBSTER, *supra* note 29, at 91).

³² *Id.* (citing Brief for Petitioner at 23, *Crawford*, 541 U.S. 36 (No. 02-9410)).

³³ *Id.* at 51–52 (omission in original) (citing *White v. Illinois*, 502 U.S. 346, 365 (1992) (Thomas, J., concurring)).

³⁴ *Id.* at 52 (citing Brief for National Association of Criminal Defense Lawyers et al. as Amici Curiae at 3, *Crawford*, 541 U.S. 36 (No. 02-9410)).

³⁵ *Id.*

³⁶ *See, e.g., Davis v. Washington*, 547 U.S. 813, 822 (2006).

³⁷ *Crawford*, 541 U.S. at 53–54. Justice Scalia also declined to overturn the dying declaration exception, although he indicated that it could not be justified on anything more than a *sui generis* historical basis. *Id.* at 56 n.6.

³⁸ *Davis*, 547 U.S. at 817.

Washington.³⁹ In his majority opinion, Scalia made the following “non-exhaustive” distinction between “testimonial” and “nontestimonial” statements:

Statements are nontestimonial when made in the course of police interrogation under circumstances objectively indicating that the primary purpose of the interrogation is to enable police assistance to meet an ongoing emergency. They are testimonial *when the circumstances objectively indicate that there is no such ongoing emergency, and that the primary purpose of the interrogation is to establish or prove past events potentially relevant to later criminal prosecution*.⁴⁰

This rule has been interpreted as establishing a purpose-based approach to determine whether a statement is testimonial, specifically: Did the circumstances indicate that the statement would be used for prosecution?⁴¹ Thus, the Court seems to have adopted the third of the three definitions proposed in *Crawford*, although the other two continue to be cited by the Court.⁴²

Here, Justices Scalia and Thomas parted ways. In his partial concurrence, Justice Thomas maintained the same rule he had adhered to since *White*: The Confrontation Clause is implicated by “extrajudicial statements” only if they are “contained in formalized testimonial materials, such as affidavits,” or otherwise “carry sufficient indicia of solemnity to constitute formalized statements.”⁴³ Justice Thomas specifically rejected the “primary purpose” requirement as being too unpredictable.⁴⁴ Thus, Justice Thomas’s definition of “testimonial” differs from the definition adopted by the majority in that it replaces the “primary purpose” requirement with a requirement of “solemnity.”

The Court’s Confrontation Clause jurisprudence reached its most recent stage of development in *Melendez-Diaz v. Massachusetts*. *Melendez-Diaz* dealt with three “certificates of analysis” submitted into evidence by forensic analysts to identify a substance found in the defendant’s possession as cocaine.⁴⁵ In a 5-4 decision, the Court held that the certificates were testimonial.⁴⁶ Writing for the majority, Justice

³⁹ *Id.* at 813.

⁴⁰ *Id.* at 822 (emphasis added).

⁴¹ *E.g.*, *Melendez-Diaz v. Massachusetts*, 129 S. Ct. 2527, 2532 (2009) (quoting *Crawford*, 541 U.S. at 52).

⁴² *Id.* at 2531 (quoting *Crawford*, 541 U.S. at 51–52).

⁴³ *Davis*, 547 U.S. at 836–37 (Thomas, J., concurring in part and dissenting in part) (quoting *White v. Illinois*, 502 U.S. 346, 365 (1992) (Thomas, J., concurring)).

⁴⁴ *Id.* at 834.

⁴⁵ *Melendez-Diaz*, 129 S. Ct. at 2530–31.

⁴⁶ *Id.* at 2532. While two members of the narrow majority, Justices Stevens and Souter, have since left the Court, *Melendez-Diaz* was affirmed following Justice Souter’s replacement by Justice Sotomayor in *Briscoe v. Virginia*, 130 S. Ct. 1316 (2010) (per

Scalia rejected several arguments as to why the Confrontation Clause did not apply to the certificates.

One argument rejected by the Court was that the analysts were not witnesses “against” the defendant because they did not directly accuse him.⁴⁷ The Court reasoned that all the prosecution’s witnesses are witnesses “against” the defendant, just as all the defendant’s witnesses are witnesses “in his favor,” stating that “there is not a third category of witnesses.”⁴⁸

The Court also rejected the argument that the analysts were not “conventional” witnesses because they recorded “near-contemporaneous” observations rather than past events, because they “observe[d] neither the crime nor any human actions related to it[.]” and because “[the] statements were not provided in response to interrogation.”⁴⁹ Justice Scalia argued that existing authority did not permit distinctions on the basis of contemporaneity or direct observation and that “[t]he Framers were no more willing to exempt from cross-examination volunteered testimony . . . than they were to exempt answers to detailed interrogation.”⁵⁰

The Court further rejected any arguments that the certificates constituted “neutral, scientific testing[.]” such that confrontation would not be terribly helpful because the analysts would be unlikely to change their opinions after seeing the defendant.⁵¹ Rather, Justice Scalia noted that such tests are not always as neutral as they appear and that, at any rate, the Court “do[es] not have license to suspend the Confrontation Clause when a preferable trial strategy is available.”⁵²

Meanwhile, Justice Thomas concurred, reasserting his “formalization” standard from *White*, but casting his crucial fifth vote

curiam). Justice Kagan’s position on *Melendez-Diaz* is uncertain. See *Nomination of Elena Kagan to be an Associate Justice of the U.S. Supreme Court—Day Three: Before the S. Judiciary Comm.*, 111th Cong. 20–21 (2010) (LexisNexis Congressional CIS S 52-20100630-01) (answer by Justice Kagan noting that as Solicitor General she had filed an amicus brief in *Briscoe* arguing that *Melendez-Diaz* is impractical and should be overturned, but then praising Justice Scalia for ruling based on his interpretation of the law rather than on his alleged preference for prosecutors over defendants).

⁴⁷ *Melendez-Diaz*, 129 S. Ct. at 2533 (citing Brief for Respondent at 10, *Melendez-Diaz*, 129 S. Ct. 2527 (No. 07-591)).

⁴⁸ *Id.* at 2534.

⁴⁹ *Id.* at 2535 (quoting *id.* at 2551–52 (Kennedy, J., dissenting)).

⁵⁰ *Id.* (quoting *Davis v. Washington*, 547 U.S. 813, 822–23 n.1 (2006)).

⁵¹ *Id.* at 2536 (citing Brief for Respondent at 29, 31, *Melendez-Diaz*, 129 S. Ct. 2527 (No. 07-591)).

⁵² *Id.*

with the majority because the certificates in question constituted affidavits.⁵³

Note that whereas in *Davis*, Justices Scalia and Thomas seemed to espouse different standards—Justice Scalia applying a “primary purpose” test and Justice Thomas preferring to look for solemnity—here, the majority opinion incorporates both.⁵⁴ Indeed, in the majority opinion, Justice Scalia specifically mentions that the certificates were “quite plainly affidavits” because they were “declaration[s] of fact written down and sworn to by the declarant before an officer authorized to administer oaths,”⁵⁵ and Justice Thomas cites this as his basis for joining the majority.⁵⁶ This raises an interesting wrinkle in current jurisprudence: while solemnity is not generally required for a statement that is testimonial, if the testimony is an allegedly “neutral” scientific report, it is uncertain whether it must be formalized to be testimonial, as there is no case in which a majority of justices have held that such reports can be testimonial without being formalized. Of course, if such a report is submitted directly, it is likely to be formalized, if only for authentication purposes.⁵⁷ Nevertheless, in situations in which the report is not actually entered into evidence, but rather forms the basis for an expert’s testimony, this wrinkle in Confrontation Clause jurisprudence could affect a court’s analysis.⁵⁸

II. WHEN IS COMPUTERIZED EVIDENCE TESTIMONIAL?

A. *Who is the Speaker?: Some Guidance from Hearsay Analysis*

Before determining whether computerized evidence constitutes a testimonial statement, one must determine whether it constitutes a statement at all. Several courts have held that certain types of computerized evidence are “statements” of the machines, and therefore

⁵³ *Id.* at 2543 (Thomas, J., concurring) (quoting *White v. Illinois*, 502 U.S. 346, 365 (1992) (Thomas, J., concurring)).

⁵⁴ *Id.* at 2532 (noting that the certificates were “quite plainly affidavits” and that “the sole purpose of the affidavits was to provide” evidence for trial).

⁵⁵ *Id.* (alteration in original) (quoting BLACK’S LAW DICTIONARY 62 (8th ed. 2004)).

⁵⁶ *Id.* at 2543 (Thomas, J., concurring) (quoting *id.* at 2532).

⁵⁷ *See, e.g., id.* at 2532 (noting that the certificates of analysis submitted in that case were sufficiently formalized to “quite plainly [be] affidavits”).

⁵⁸ *People v. Vargas*, 100 Cal. Rptr. 3d 578, 587 (Ct. App. 2009), *review denied*, No. S178100, 2010 Cal. LEXIS 1451 (2010); *see People v. Rutterschmidt*, 98 Cal. Rptr. 3d 390, 412 (Ct. App. 2009) (holding that Justice Thomas’s concurrence prevents *Melendez-Diaz* from being applied to nonformalized reports) (quoting *Melendez-Diaz*, 129 S. Ct. at 2543 (Thomas, J., concurring)), *review granted, depublished by* 220 P.3d 239 (Cal. 2009); *see also People v. Dungo*, 98 Cal. Rptr. 3d 702, 710–11 (Ct. App. 2009) (holding an autopsy report to be testimonial because it met both the formality test and the purpose test) (quoting *Melendez-Diaz*, 129 S. Ct. at 2532), *review granted, depublished by* 220 P.3d 240 (Cal. 2009).

are not true statements, as true statements can be made only by persons.⁵⁹ Indeed, if the “speaker” is a machine, the Confrontation Clause’s remedy of confrontation and cross-examination becomes nonsensical; the notion of a machine itself taking the witness stand for cross-examination approaches the realm of science fiction.⁶⁰ For the guarantees of the Confrontation Clause to mean anything, there must be a human witness against whom they can attach. Thus, any analysis of whether computerized evidence is testimonial must begin by distinguishing between non-statements by machines and statements by their technicians.

Because much more work has been done on this subject in the realm of hearsay than in the realm of Confrontation Clause jurisprudence, it might be helpful to draw on the former in this analysis.⁶¹ While the Supreme Court has warned against conflating hearsay principles with Confrontation Clause jurisprudence, it has also acknowledged their overlap.⁶² Meanwhile, lower courts have argued that there is no indication that the standard as to who is the “speaker” behind computerized evidence should differ between the hearsay rule and the Confrontation Clause.⁶³ Unfortunately, this argument is undermined somewhat by the fact that the definition of “statement” under the hearsay rule has been altered in ways the Supreme Court might not tolerate for the Confrontation Clause.⁶⁴ Thus, one cannot say that the

⁵⁹ See, e.g., *United States v. Washington*, 498 F.3d 225, 230 (4th Cir. 2007), *cert. denied*, 129 S. Ct. 2856 (2009); *People v. McNeeley*, No. 283061, 2010 Mich. App. LEXIS 39, at *24–25 (Ct. App. Jan. 12, 2010) (unpublished; per curiam) (“[E]xplicit in the definition of ‘testimonial evidence’ is that it must come from a ‘witness,’ i.e., a natural person (who can be confronted and cross-examined).”). While the rule that a “statement” can be made only by a person is made explicit in hearsay analysis, FED. R. EVID. 801(a), the Confrontation Clause definition of what constitutes a testimonial statement is not so specific on the matter.

⁶⁰ *United States v. Moon*, 512 F.3d 359, 362 (7th Cir. 2008) (“[H]ow could one cross-examine a gas chromatograph? Producing spectrographs, ovens, and centrifuges in court would serve no one’s interests.”), *cert. denied*, 129 S. Ct. 40 (2008); *McNeeley*, 2010 Mich. App. LEXIS 39, at *25 n.1 (unpublished; per curiam) (“A computer database cannot possibly be confronted or cross-examined, as an affiant, deponent, or other type of witness can.”). Presumably, the defendant could test the machine by having an expert analyze its processes or re-run the analysis, but this would seem to be more a question of discovery and authentication than of confrontation. See *Washington*, 498 F.3d at 231; FED. R. CIV. P. 34.

⁶¹ See *United States v. Lamons*, 532 F.3d 1251, 1263 (11th Cir. 2008) (computer-generated phone records), *cert. denied*, 129 S. Ct. 524 (2008); *Washington*, 498 F.3d at 230 n.1 (machine-generated blood-alcohol analysis).

⁶² *Melendez-Diaz v. Massachusetts*, 129 S. Ct. 2527, 2539 (2009).

⁶³ See *Lamons*, 532 F.3d at 1263; *Washington*, 498 F.3d at 230 n.1.

⁶⁴ Compare GLEN WEISSENBERGER & JAMES J. DUANE, FEDERAL RULES OF EVIDENCE: RULES, LEGISLATIVE HISTORY, COMMENTARY AND AUTHORITY § 801.3 (6th ed. 2009) (noting that the hearsay rule’s definition of “statement” has been changed due to

definition of “statement” under the hearsay rule is dispositive in analyzing the Confrontation Clause. Nevertheless, such analyses do provide a useful starting place for a discussion of what constitutes a statement under the Confrontation Clause.

Many courts have not questioned the proper classification of computerized evidence, instead relying on standard hearsay analysis, on the apparent assumption that any computerized data was a statement of the operator.⁶⁵ Those that have addressed the issue tend to draw a distinction between computer-generated evidence and computer-stored evidence.⁶⁶ Computer-generated evidence is evidence automatically generated by the computer: this is deemed to be a “statement” only of the computer and therefore not hearsay.⁶⁷ In contrast, computer-stored evidence is entered by a human, and is therefore a statement of that human.⁶⁸ A third category, not mentioned in the preceding dichotomy but potentially relevant to the present discussion, is that of computer-enhanced evidence.⁶⁹

Those courts that draw a distinction between computer-generated and computer-stored evidence do so on the basis of human intervention, or lack thereof.⁷⁰ Evidence is computer-generated, and therefore not hearsay, if it “involve[s] so little intervention by humans in [its] generation as to leave no doubt that [it is] wholly machine-generated for

principles of reliability) (citing FED. R. EVID. 801(a) Advisory Committee’s Note (indicating that nonverbal conduct constitutes a “statement” only when it was intended as a statement, because conduct not intended as a statement is not likely to involve fabrication); *Wright v. Doe d/Tatham*, (1837) 112 Eng. Rep. 488 (K.B.) 499–500; 7 AD. & E. 313, 341 (an earlier case applying the rule without intent analysis)), *with Crawford v. Washington*, 541 U.S. 36, 62 (2004) (“Dispensing with confrontation because testimony is obviously reliable is akin to dispensing with jury trial because a defendant is obviously guilty.”).

⁶⁵ Adam Wolfson, Note, “*Electronic Fingerprints*”: *Doing Away with the Conception of Computer-Generated Records as Hearsay*, 104 MICH. L. REV. 151, 157 (2005).

⁶⁶ For a good overview of the distinction between computer-generated and computer-stored data under the hearsay rule, and an argument as to why computer-generated evidence should not be considered hearsay, see *id.* at 157–158.

⁶⁷ *Lamons*, 532 F.3d 1251, 1261 (11th Cir. 2008) (phone records); *Washington*, 498 F.3d at 230–31 (blood-alcohol analysis); *United States v. Hamilton*, 413 F.3d 1138, 1142 (10th Cir. 2005) (internet header automatically generated by uploading child pornography); *United States v. Khorozian*, 333 F.3d 498, 506 (3d Cir. 2003) (automatically generated fax header); *People v. Holowko*, 486 N.E.2d 877, 879 (Ill. 1985) (call tracers); *State v. Armstead*, 432 So. 2d 837, 840 (La. 1983) (phone records); see also Wolfson, *supra* note 65, at 157 (collecting sources).

⁶⁸ Wolfson, *supra* note 65, at 158 (citing *United States v. Duncan*, 30 M.J. 1284, 1288–89 (N-M. Ct. Crim. App. 1990)).

⁶⁹ *E.g.*, *State v. Swinton*, 847 A.2d 921, 938 (Conn. 2004) (collecting cases distinguishing computer-enhanced evidence from computer-generated evidence); GREGORY P. JOSEPH, MODERN VISUAL EVIDENCE § 1.04[3][c] (Release 50 2010).

⁷⁰ *E.g.*, *Lamons*, 532 F.3d at 1263 n.23, 1264 n.24 (citations omitted).

all practical purposes.”⁷¹ Conversely, data that is entered by persons is merely computer-stored, and is therefore subject to all of the requirements of the hearsay rule.⁷² This distinction is based more on the definition of the word “statement” than on any claims of particular reliability.⁷³ Indeed, even if computer-generated evidence is not directly subject to hearsay or Confrontation Clause restraints, it still requires authentication of the computer process, which could raise confrontation issues of its own.⁷⁴

A third possible category of computerized evidence is computer-enhanced evidence.⁷⁵ For example, suppose there is a burglary at a convenience store. The burglar is captured on a security camera, but the footage is fuzzy, causing the burglar’s appearance to be hard to discern. To rectify this problem, forensic analysts work to clarify the image of the burglar’s face on the video.⁷⁶ Such analysis can be done, and has been admitted by the courts as simply enhancing, rather than simulating, the video evidence.⁷⁷ At first glance, this may seem to be a good analog for certain types of computerized evidence that similarly require the computer processing of existing data.⁷⁸ Unfortunately, computer-enhanced evidence is generally addressed in terms of reliability and

⁷¹ *Id.* at 1263 n.23 (citing *Khorozian*, 333 F.3d at 506; *United States v. Vela*, 673 F.2d 86, 90 (5th Cir. 1982); *Holowko*, 486 N.E.2d at 879); *accord Hamilton*, 413 F.3d at 1142; *Armstead*, 432 So.2d at 839–40.

⁷² *E.g., Lamons*, 532 F.3d at 1264 n.24; *Hamilton*, 413 F.3d at 1142 n.4.

⁷³ *Khorozian*, 333 F.3d at 506–07 (fax headers not hearsay even though they can be “easily fabricated by the sender”); *United States v. Washington*, 498 F.3d 225, 231 (4th Cir. 2007) (“[C]oncerns about the reliability of . . . machine-generated information [are] addressed through the process of authentication and not by hearsay or Confrontation Clause analysis.” (emphasis omitted)), *cert. denied*, 129 S. Ct. 2856 (2009).

⁷⁴ *See, e.g., Grant v. Commonwealth*, 682 S.E.2d 84, 87 n.2, 88–89 (Va. Ct. App. 2009) (noting that the results of a breath test are non-testimonial because they come from a machine, but holding that the attestation clause was similar to an affidavit and required testimony by the operator who signed it). *Compare State v. Bergin*, 217 P.3d 1087, 1089 (Or. Ct. App. 2009) (certificates of accuracy for Intoxilyzers not testimonial because, unlike the certificates in *Melendez-Diaz*, they are not under oath, do not directly prove an element of the crime, and are prepared with no guarantee that they will ever be used at trial), *with United States v. Clark*, No. 09-10067, 2009 U.S. Dist. LEXIS 100760, at *1–2 (C.D. Ill. Oct. 27, 2009) (certification of drug-sniffing dog requires testimony of his trainer under the Confrontation Clause).

⁷⁵ *E.g., State v. Swinton*, 847 A.2d 921, 938 (Conn. 2004) (citations omitted); JOSEPH, *supra* note 69, § 1.04[3][c].

⁷⁶ *See Commonwealth v. Auken*, 681 A.2d 1305, 1313 (Pa. 1996), for a similar scenario.

⁷⁷ *E.g., id.* at 1313 & n.2 (“The enhancement did not add or take away from the subject matter of the picture; rather it lightened or darkened the field of the picture.”).

⁷⁸ For example, such simple data-processing was present in the blood-alcohol analysis in *United States v. Washington*, 498 F.3d 225, 228 (4th Cir. 2007), *cert. denied*, 129 S. Ct. 2856 (2009).

authentication rather than in terms of hearsay or the Confrontation Clause.⁷⁹ Indeed, since *Crawford*, there has been only one case that dealt with a hearsay or confrontation claim regarding computer-enhanced evidence, and that case addressed the issue via a pre-*Crawford* reliability analysis.⁸⁰ The reason for this lack of case law may be that authentication of computer-enhanced evidence itself requires testimony by a technician who performed the enhancement and is capable of describing the enhancement process in “specific detail[.]”⁸¹ Indeed, the authentication of computer-enhanced evidence will generally require, at the very least, some form of detailed certification of the sort addressed in *Melendez-Diaz*.⁸² Thus, any attempt to address the Confrontation Clause implications of machine-run tests by comparing the processing of such evidence to computer enhancement of a photograph would likely prove fruitless.

B. Confronting the Issue: Can “Things” Speak for Themselves?

Even though hearsay analysis is not applicable to the Confrontation Clause in its own right,⁸³ the Supreme Court has been willing to apply hearsay principles to the Confrontation Clause where such principles had a valid Confrontation Clause basis.⁸⁴ In this case, the arguments that computer-generated (and possibly computer-enhanced) data do not implicate the hearsay rule ring true for the Confrontation Clause as well.⁸⁵

⁷⁹ See JOSEPH, *supra* note 69, § 8.04[2], [4].

⁸⁰ See *Swinton*, 847 A.2d at 933 (citations omitted) (applying the pre-*Crawford* “requirement that evidence be reliable so as to satisfy the requirements of the [C]onfrontation [C]lause”).

⁸¹ See *id.* at 941 (citing *Nooner v. State*, 907 S.W.2d 677 (Ark. 1995), *Dolan v. State*, 743 So. 2d 544 (Fla. Dist. Ct. App. 1999), *English v. State*, 422 S.E.2d 924 (Ga. Ct. App. 1992)).

⁸² See JOSEPH, *supra* note 69, § 8.04[4] (“[T]he enhancement process should be well-documented.”). *But see* *Melendez-Diaz v. Massachusetts*, 129 S. Ct. 2527, 2539 (2009) (“[T]he general rule applicable to the present case[]” allows a clerk to “by affidavit *authenticate* or provide a copy of an otherwise admissible record, but . . . not . . . *create* a record for the sole purpose of providing evidence against a defendant.”).

⁸³ *E.g.*, *Crawford v. Washington*, 541 U.S. 36, 51 (2004).

⁸⁴ *Giles v. California*, 128 S. Ct. 2678, 2682, 2688–89 (2008) (applying the hearsay definition of forfeiture by wrongdoing to the Confrontation Clause on the basis that the underlying principles were in place at the time of the Founding).

⁸⁵ *E.g.*, *United States v. Lamons*, 532 F.3d 1251, 1263 (11th Cir. 2008) (holding machine-generated data to be nontestimonial), *cert. denied*, 129 S. Ct. 524 (2008); *United States v. Moon*, 512 F.3d 359, 362 (7th Cir. 2008) (same), *cert. denied*, 129 S. Ct. 40 (2008); *United States v. Washington*, 498 F.3d 225, 232 (4th Cir. 2007) (same), *cert. denied*, 129 S. Ct. 2856 (2009); *People v. Brown*, 918 N.E.2d 927, 931–32 (N.Y. 2009) (same, even after *Melendez-Diaz*); *State v. Tindell*, No. E2008-02635-CCA-R3-CD, 2010 Tenn. Crim. App. LEXIS 528, at *38 (June 22, 2010) (same).

It is unlikely that a computer could qualify under the Supreme Court's definition of "witness," a word which itself seems to imply personhood.⁸⁶ Computerized evidence does not seem to meet Justice Scalia's "primary purpose" standard as no observer would believe that a computer "intended" its output for prosecution because computers lack the capability of forming "intentions" of any sort.⁸⁷ Additionally, both Justice Scalia's and Justice Thomas's definitions of "testimonial" require at least some degree of solemnity.⁸⁸ Justice Scalia's majority definition seems to require the witness to be under oath⁸⁹ or otherwise subject to "severe consequences" in the event of a "deliberate falsehood."⁹⁰ It is unlikely that machines are ever placed under oath, nor can machines fear any sort of punishment, commit a falsehood, or do anything else "deliberately." Similarly, Justice Thomas's standard of solemnity—statements "contained in formalized testimonial materials" or otherwise "accompanied by . . . indicia of formality"⁹¹—does not seem to apply to computer printouts, unless certifications made for authentication purposes qualify as "indicia of formality."⁹²

Finally, although the Court is averse to determining the requirements of the Confrontation Clause based on practical concerns,⁹³ the notion of placing an inanimate object on the witness stand seems to be sufficiently beyond the intentions of the Framers to place it outside the bounds of the Confrontation Clause.⁹⁴

While the Supreme Court has not addressed the Confrontation Clause implications of computerized evidence, it seems that the

⁸⁶ *Tindell*, 2010 Tenn. Crim. App. LEXIS, at *38; see *Crawford*, 541 U.S. at 51 (citing 2 WEBSTER, *supra* note 29, at 116) (witnesses are "those *who* 'bear testimony'" (emphasis added)).

⁸⁷ See, e.g., *Washington*, 498 F.3d at 232 (machines are incapable of comprehending the difference between output produced for legal purposes and output produced for nonlegal purposes).

⁸⁸ E.g., *Davis v. Washington*, 547 U.S. 813, 826 (2006) (quoting *Crawford*, 541 U.S. at 51); *id.* at 836 (Thomas, J., concurring).

⁸⁹ See *Melendez-Diaz v. Massachusetts*, 129 S. Ct. 2527, 2532 (2009).

⁹⁰ See *Davis*, 547 U.S. at 826 (quoting *Crawford*, 541 U.S. at 51).

⁹¹ See *Melendez-Diaz*, 129 S. Ct. at 2543 (Thomas, J., concurring) (citations omitted).

⁹² Such certifications can include certificates of accuracy, see, e.g., *State v. Bergin*, 217 P.3d 1087 (Or. Ct. App. 2009), or attestation clauses, see, e.g., *Grant v. Commonwealth*, 682 S.E.2d 84, 87 (Va. Ct. App. 2009). Where such forms of authentication have been addressed in the context of the Confrontation Clause, they have been taken as potentially testimonial statements in their own right rather than as a basis for deeming the underlying computerized evidence to be testimonial. E.g., *Grant*, 682 S.E.2d at 87.

⁹³ *Melendez-Diaz*, 129 S. Ct. at 2536.

⁹⁴ *United States v. Moon*, 512 F.3d 359, 362 (7th Cir. 2008), *cert. denied*, 129 S. Ct. 40 (2008) ("Producing spectrographs, ovens, and centrifuges in court would serve no one's interests.").

dichotomy of “computer’s ‘statement’” versus “programmer’s statement” applied under the hearsay rule would work for the Confrontation Clause as well.⁹⁵ This dichotomy is not as novel as it appears: Fundamentally, computers are nothing more than inanimate objects from which people can infer information. Such objects have, of course, been entered into evidence from time immemorial, without any objection regarding the age-old right of confrontation.⁹⁶ Indeed, at a theoretical level, it is hard to distinguish most of the records deemed to be computer-generated from footprints left in the mud outside the scene of a crime.⁹⁷ There are, however, a couple of differences between computers and other evidence-producing inanimate objects that might be worth addressing.

The first, and most obvious, difference between computer-generated evidence and other evidence produced by inanimate objects is that the former is more likely to be in the form of text. This difference, though very visible, is likely a red herring. Of the various tests that the Supreme Court has set for determining whether evidence is testimonial, the only one that examines the form of the evidence is Justice Thomas’s,⁹⁸ and it seems unlikely that a textual form alone would be enough to grant computer-generated data “similar indicia of formality.”⁹⁹

A more significant argument for distinguishing computer-generated evidence from other evidence generated by inanimate objects is the fact that computers are programmed by humans. Of course, such programming and maintenance would probably constitute business records, which generally do not fit the Supreme Court’s definition of “testimonial.”¹⁰⁰ An exception may exist where the machine is programmed for the precise purpose of prosecution (e.g., a

⁹⁵ See *United States v. Crockett*, 586 F. Supp. 2d 877, 885 (E.D. Mich. 2008) (citing *United States v. Washington*, 498 F.3d 225, 231 (4th Cir. 2007)); *State v. Bullcoming*, 2010-NMCA-007, ¶ 19, 226 P.3d 1, 8–9 (citations omitted) (collecting cases and holding that where the analyst “was not required to interpret the results, exercise independent judgment, or employ any particular methodology in transcribing the results,” that analyst “was a mere scrivener, and Defendant’s true ‘accuser’ was the gas chromatograph machine” such that “the live, in-court testimony of a separate qualified analyst is sufficient to fulfill a defendant’s right to confrontation”), *cert. granted*, 177 L. Ed. 2d 1152 (2010).

⁹⁶ See, e.g., *Crawford v. Washington*, 541 U.S. 36, 51 (2004) (citing 2 WEBSTER, *supra* note 29, at 114) (holding that the Confrontation Clause only applies to those who “bear testimony”). Such exhibits may still create confrontation issues if they are authenticated through potentially testimonial hearsay. See *infra* note 102.

⁹⁷ See Wolfson, *supra* note 66, at 166, for a similar comparison of computer-generated data to fingerprints.

⁹⁸ See *supra* note 43–44 and accompanying text.

⁹⁹ *Melendez-Diaz*, 129 S. Ct. at 2543 (2009) (Thomas, J., concurring).

¹⁰⁰ *Crawford*, 541 U.S. at 56 (noting that business records by their nature are nontestimonial).

breathalyzer).¹⁰¹ Even in those cases, however, the courts have tended to attach any confrontation issue to the documents authenticating the process rather than to output itself.¹⁰² This seems to be the better approach, because any human input (and thus any potential “testimony”) comes from the programming, maintenance, and operation of the device, and not from the final printout.

This still leaves open the possibility that the operators may need to testify as to the procedures they conducted. *United States v. Washington*¹⁰³ offers a good example of the competing rules in this regard. In *Washington*, the majority held that the raw data generated by a blood-alcohol machine was not a statement of the technicians who operated it.¹⁰⁴ The dissent responded that this would be true only if the data was generated “without the assistance or input of a person.”¹⁰⁵ For this argument, Judge Michael cited the fact that the past cases dealing with machine-generated data specifically noted that the data was generated automatically, without human assistance.¹⁰⁶ At first glance, Judge Michael’s position seems to be the sounder one: In light of the Supreme Court’s broad view of the Confrontation Clause, it seems that the only way one could justify a lack of confrontation is if there was truly no testimonial human input involved. Still, under Justice Thomas’s rule, the act of inputting the samples into the machines may not be solemn enough to be testimonial.¹⁰⁷ While one could argue that all official analysis of a crime is solemn, this would seem to conflict with Justice

¹⁰¹ *E.g.*, *Shiver v. State*, 900 So. 2d 615, 618 (Fla. Dist. Ct. App. 2005) (holding that a report of breathalyzer calibration required testimony by the calibrating officer); *see also Melendez-Diaz*, 129 S. Ct. at 2538 (stating that business records can be testimonial when “the regularly conducted business activity is the production of evidence for use at trial”). *Contra, e.g.*, *State v. Fitzwater*, 227 P.3d 520, 540 (Haw. 2010) (holding that the certification of a police car’s speed-checking instruments, conducted “five months prior to the alleged speeding incident,” was nontestimonial); *see Melendez-Diaz*, 129 S. Ct. at 2532 n.1 (“[D]ocuments prepared in the regular course of equipment maintenance may well qualify as nontestimonial records.”).

¹⁰² *See, e.g.*, *Shiver*, 900 So. 2d at 618 (calibration records testimonial); *Ramirez v. State*, 928 N.E.2d 214, 219 (Ind. Ct. App. 2010) (certificates of accuracy nontestimonial); *State v. Johnson*, 233 P.3d 290, 299 (Kan. Ct. App. 2010) (same); *State v. Bergin*, 217 P.3d 1087, 1089–90 (Or. Ct. App. 2009) (same); *State v. Norman*, 125 P.3d 15, 19 (Or. Ct. App. 2005) (collecting cases). Such documents are typically deemed nontestimonial when prepared in the course of routine maintenance and testimonial when certified for a specific case. *See, e.g.*, *United States v. Bacas*, 662 F. Supp. 2d 481, 485 (E.D. Va. 2009).

¹⁰³ 498 F.3d 225 (4th Cir. 2007), *cert. denied*, 129 S. Ct. 2856 (2009).

¹⁰⁴ *Id.* at 230.

¹⁰⁵ *Id.* at 233 (Michael, J., dissenting) (quoting *United States v. Hamilton*, 413 F.3d 1138, 1142 (10th Cir. 2005)).

¹⁰⁶ *Id.* (citing *United States v. Khorozian*, 333 F.3d 498, 506 (3d Cir. 2003)).

¹⁰⁷ *Melendez-Diaz*, 129 S. Ct. at 2543 (Thomas, J., concurring) (citations omitted) (arguing that extrajudicial statements are testimonial only if contained in “formalized testimonial materials,” or otherwise “accompanied by . . . indicia of formality”).

Thomas's statement that his vote in *Melendez-Diaz* was based on the fact that the certificates of analysis were "quite plainly affidavits."¹⁰⁸ Had the mere fact that they were done in a forensic lab been sufficient formalization, the determination that they were affidavits would have been unnecessary. Or perhaps the fact that they were affidavits was so clearly dispositive that Justice Thomas simply did not need to address the argument that all forensic analysis carries indicia of formality.¹⁰⁹ The proper resolution of the issue is uncertain, which may be why the Supreme Court declined to vacate *Washington* on the grounds of *Melendez-Diaz*,¹¹⁰ unlike many other Confrontation Clause cases then pending.¹¹¹ For the time being, however, it seems that the actions of machine operators do not implicate the Confrontation Clause unless they are sufficiently formalized to be testimonial, and such formalization probably requires something more than the mere presence of the criminal justice system.¹¹²

While the current state of the law may not be entirely clear on this matter, it seems logical to propose that if all the technicians have done is merely input the data into the machine, no testimonial hearsay has occurred. Rather, the mere act of inputting evidence into a machine, where it is done without need for human judgment or analysis, seems to be a question of chain of custody more than it is an actual statement.¹¹³ While the Court in *Melendez-Diaz* did mention concerns about "drylabbing,"¹¹⁴ drylabbing primarily involves questions of how the evidence was handled, so it is best dealt with as an issue primarily of authentication, which was mentioned in the context of confrontation only to rebut the dissent's suggestion that the confrontation of "neutral" lab

¹⁰⁸ *Id.* (citations omitted).

¹⁰⁹ *But see* *Davis v. Washington*, 547 U.S. 813, 837–38 (2006) (Thomas, J., concurring in part and dissenting in part) (citations omitted) (arguing that discussion with a police officer is not sufficiently solemn when not accompanied by Miranda warnings).

¹¹⁰ *See* *Washington v. United States*, 129 S. Ct. 2856 (2009).

¹¹¹ *E.g.*, *Morales v. Massachusetts*, 129 S. Ct. 2858 (2009); *Barba v. California*, 129 S. Ct. 2857 (2009); *Crager v. Ohio*, 129 S. Ct. 2856 (2009).

¹¹² *See* *Davis*, 547 U.S. at 837–38 (Thomas, J., concurring in part and dissenting in part) (citations omitted) (arguing that discussion with a police officer is not sufficiently solemn when not accompanied by Miranda warnings); *see also* *Grant v. Commonwealth*, 682 S.E.2d 84, 87 (Va. Ct. App. 2009) (holding that the attestation clause of a breathalyzer report is testimonial).

¹¹³ *See* *Deeds v. State*, 2008-KA-00146-SCT (¶ 23) (Miss. 2009) (stating that the mere handling of physical evidence does not constitute a statement for purposes of the Confrontation Clause), *cert. denied*, 178 L. Ed. 2d 37 (2010); *cf.* *United States v. Boyd*, 686 F. Supp. 2d 382, 383, 385–86 (S.D.N.Y. 2010) (allowing testimony regarding the result tests done by human analysts where those tests consisted of "routine procedures").

¹¹⁴ *Melendez-Diaz*, 129 S. Ct. at 2536–37. Drylabbing is the fraudulent practice of reporting "results" from tests that were never performed. *Id.*

analysts must necessarily be fruitless.¹¹⁵ Although one could argue that the entry of the computer's output into evidence contains an implicit assertion that the technicians inputted the proper sample, the introduction of any physical evidence contains similar implicit assertions as to that evidence's authenticity. But such implicit "assertions" certainly do not constitute "statements" for purposes of the Confrontation Clause; if they did, everyone who handled the evidence would be making such an "assertion" simply by handing it off to the next person, but the Supreme Court has made it clear that the mere handling of evidence does not implicate the Confrontation Clause.¹¹⁶

III. WHO MUST TESTIFY TO TESTIMONIAL COMPUTERIZED EVIDENCE?

A. Computers with Human Speakers

When computerized evidence does implicate the Confrontation Clause, whom does the Confrontation Clause require to testify regarding it? Although the Supreme Court in *Melendez-Diaz* stated that the "witnesses" in that case were "the analysts,"¹¹⁷ it did not specify which of the analysts must testify (or whether they all must testify).¹¹⁸ Thus, it remains unclear who must testify in order to admit such evidence.¹¹⁹

This ambiguity has provoked some disagreement among the courts. The majority of jurisdictions take the seemingly straightforward approach that the report's preparer is the ultimate witness behind the report, and therefore the one who must testify in court.¹²⁰

¹¹⁵ *Id.*

¹¹⁶ *Id.* at 2532 n.1 (rejecting the notion that everyone involved in chain of custody must testify to satisfy the Confrontation Clause).

¹¹⁷ *Id.* at 2532.

¹¹⁸ *Id.* at 2544 (Kennedy, J., dissenting).

¹¹⁹ See *United States v. Blazier*, 68 M.J. 439, 444 (C.A.A.F. 2010) (noting disagreement). Compare *People v. Lopez*, 98 Cal. Rptr. 3d 825, 827, 829 (Cal. Ct. App. 2009) (holding that a supervisor could not testify as to results of test performed by another), *review granted, depublished by* 220 P.3d 240 (Cal. 2009), with *Manzano v. Clay*, No. CV 09-06817 JHN (AN), 2010 U.S. Dist. LEXIS 77335, at *25, 28 (C.D. Cal. June 11, 2010) (holding that a supervisor could testify to admit a report prepared by an analyst under his supervision).

¹²⁰ See, e.g., *United States v. Martinez-Rios*, 595 F.3d 581, 586 (5th Cir. 2010); *Sanders v. Dir. of CDC*, No. CIV S-05-2250 FCD DAD P, 2009 U.S. Dist. LEXIS 63049, at *35 (E.D. Cal. July 14, 2009); *Harrod v. State*, 993 A.2d 1113, 1139 (Md. Ct. Spec. App. 2010) (holding that the issue was not preserved), *cert. granted*, 1 A.3d 467 (Md. 2010); *State v. Mooney*, 2009-OH-5886, at ¶ 37 (citations omitted) (implying that *Melendez-Diaz*, where it requires testimony, requires testimony by the author of the report); *State v. Willis*, 213 P.3d 1286, 1289 (Or. Ct. App. 2009) (citations omitted), *rev'd on other grounds*, 236 P.3d 714 (Or. 2010); see also *United States v. Mouzin*, 785 F.2d 682, 693 (9th Cir. 1986); *People v. Rogers*, 780 N.Y.S.2d 393, 397 (N.Y. App. Div. 2004).

Another common requirement is that the witness must have actually done the work upon which the report was based,¹²¹ or otherwise have firsthand knowledge of the analysis.¹²²

Other states are more lenient in their rules: Illinois and North Carolina have held that the testimony of an unrelated expert can satisfy the Confrontation Clause when the expert provides an independent analysis and criticism of the report.¹²³ Some jurisdictions allow experts to testify without firsthand knowledge of the tests, as long as they were “actively involved in the production of the report and had intimate knowledge of the analyses.”¹²⁴

Here, the majority approach is the most logical. If the report being entered into evidence by the prosecution is signed by a certain person, it follows that that report is the testimony of the signatory. This approach

¹²¹ *Shiver v. State*, 900 So. 2d 615, 618 (Fla. Dist. Ct. App. 2005) (holding that a report of breathalyzer calibration required testimony by the calibrating officer, not the officer who prepared the report); *see also* *United States v. Rose*, 587 F.3d 695, 701 (5th Cir. 2009) (declining to hold “that the prosecution may avoid confrontation issues through the in-court testimony of any witness who signed a lab report without regard to that witness’s role in conducting tests or preparing the report”), *cert. denied*, 130 S. Ct. 1915 (2010); *United States v. Clark*, No. 09-10067, 2009 U.S. Dist. LEXIS 100760, at *1–2 (C.D. Ill. Oct. 27, 2009) (holding that the certification of cocaine-sniffing dog required testimony by trainer); *Commonwealth v. King*, 928 N.E.2d 1014, 1015 (Mass. App. Ct. 2010) (stating in passing that *Melendez-Diaz* requires “testimony from the analyst who performed the test”); Transcript of Oral Argument at 26–27, *Briscoe v. Virginia*, 130 S. Ct. 1316 (2010) (*per curiam*) (No. 07-11191) (attorney for defendant-petitioner promoting this rule).

¹²² *People v. Frey*, No. 284647, 2009 Mich. App. LEXIS 1601, at *10–13 (July 28, 2009), *appeal denied*, 775 N.W.2d 788 (Mich. 2009).

The Supreme Court has recently granted certiorari to determine whether such a requirement is mandated by the Constitution. *Bullcoming v. New Mexico*, 177 L. Ed. 2d 1152 (2010). Specifically, the petition for certiorari in *Bullcoming* framed the issue as follows: “Whether the Confrontation Clause permits the prosecution to introduce testimonial statements of a nontestifying forensic analyst through the in-court testimony of a supervisor or other person who did not perform or observe the laboratory analysis described in the statements.” Petition for a Writ of Certiorari at i, *Bullcoming*, 177 L. Ed. 2d 1152 (No. 09-10876), 2010 WL 3761875 at *i.

¹²³ *People v. Williams*, No. 107550, 2010 Ill. LEXIS 971, at *36 (July 15, 2010); *State v. Davis*, No. COA09-1552, 2010 N.C. App. LEXIS 1416, at *9–13, *16–17 (Aug. 3, 2010) (collecting North Carolina cases and noting that while in some cases an expert “who admitted to having no independent or personal knowledge of what happened during the autopsy [may] testify as to the opinions contained in the autopsy report prepared by a nontestifying pathologist,” this does not apply where the expert’s review “involved no retesting and instead relied on the accuracy” of the underlying report).

¹²⁴ *McGowen v. State*, 2002-KA-00676-SCT (¶ 68) (Miss. 2003); *accord* *United States v. Boyd*, 686 F. Supp. 2d 382, 386 (S.D.N.Y. 2010). Although this case precedes *Melendez-Diaz*, and even *Crawford*, the Court in *Melendez-Diaz* cited Mississippi as a jurisdiction that already followed its holding in that case. *Melendez-Diaz*, 129 S. Ct. at 2540–41 & n.11 (other citations omitted) (citing *Barnette v. State*, 481 So. 2d 788, 792 (Miss. 1985)). *But see* *Melendez-Diaz*, 129 S. Ct. at 2558 (Kennedy, J., dissenting) (citations omitted) (“It is possible that . . . Mississippi’s practice . . . can[not] be reconciled with the Court’s holding.”).

preserves the defendant's right of confrontation while minimizing the burden on the prosecution, because the government is free to choose which of the analysts must sign the report and thereby bear the risk of having to testify. There are, however, a few ambiguities in this rule that need to be addressed.

The first ambiguity is the question of who may sign the report. Presumably, if the report could be signed by anyone, the requirements of *Melendez-Diaz* could be easily circumvented by simply having the report be signed by someone who was going to testify anyway, such as the arresting officer. This was the question that spawned *Shiver v. State*.¹²⁵ In *Shiver*, the government introduced into evidence a "breath test affidavit" that contained a record of the breathalyzer's calibration.¹²⁶ Unfortunately, the affidavit was signed by the arresting officer, who had no personal knowledge of the breathalyzer's maintenance.¹²⁷ On appeal, the state appellate court held that because "the trooper did not perform the required maintenance, he was not qualified to testify as to whether the instrument met the required statutory predicates."¹²⁸ Rather, "[t]he trooper was simply attesting to someone else's assertion," a practice which fit "the precise scenario the United States Supreme Court used to exemplify a Confrontation Clause violation."¹²⁹ This holding makes eminently good sense.¹³⁰ Indeed, the requirement that the witness be the one who prepared the report and the requirement that the witness have participated in the underlying tests are best viewed not as two alternative requirements, but as two prongs of a single standard: The witness must be one who signed the report, and the one who signed the report must be someone who participated in or supervised the tests.¹³¹

The second possible problem with requiring testimony from the report's signatory is the situation in which multiple people signed the report. In such a case, it seems that all of the signatories are witnesses,

¹²⁵ 900 So. 2d 615, 618.

¹²⁶ *Id.* at 617.

¹²⁷ *Id.*

¹²⁸ *Id.* at 618.

¹²⁹ *Id.* at 618 & n.3.

¹³⁰ *Cf.* FED. R. CIV. P. 56(e)(1) ("A[n] . . . affidavit must be made on personal knowledge . . . and show that the affiant is competent to testify on the matters stated.").

¹³¹ Compare *Commonwealth v. King*, 928 N.E.2d 1014, 1015 (Mass. App. Ct. 2010) (stating in passing that *Melendez-Diaz* requires "testimony from the analyst who performed the test"), with *Commonwealth v. Morales*, 925 N.E.2d 551, 553 (Mass. App. Ct. 2010) ("The introduction of the ballistics and drug certificates without accompanying testimony from the ballistics and lab analyst *who produced them* violated the defendant's Sixth Amendment right to confront and cross-examine the witnesses against him." (emphasis added)).

and thus all must appear.¹³² Of course, such a rule would give the prosecution good strategic reason to have such reports signed by as few people as are necessary to establish the facts contained therein.¹³³ Moreover, as a practical matter, this question is probably not as important as it seems: In the unfortunate case in which more people sign a report than are necessary to attest to its content, but those who testify at trial have sufficient knowledge to confirm its content, there is a very good chance that any error will be deemed harmless because striking the signatures of the absent signatories (and thereby reducing the report to the testimony of only those who appeared for confrontation) would not be likely to affect on the outcome of the case.¹³⁴

One final wrinkle is the scenario in which an expert witness testifies based on the contents of the report without the contents of that report being offered into evidence directly. Such a practice would certainly be appealing to the prosecution and merits thorough examination in its own right.

B. Getting a Second Opinion: May Experts Testify Regarding the Data or Conclusions of Others?

Expert testimony can provide an attractive alternative for prosecutors seeking to avoid the strict confrontation requirements of *Melendez-Diaz*. In general, expert witnesses are free to testify based on inadmissible data.¹³⁵ But just how far can prosecutors go in exploiting this gap in the defendant's confrontation protections? Courts have understandably set limits on experts' flexibility in this regard, some of them fairly strict.¹³⁶

¹³² Cf. *Melendez-Diaz*, 129 S. Ct. at 2532 n.1 (citations omitted) (noting that it is for the prosecution to decide whose testimony is necessary to establish chain of custody, but those who do testify must be present for confrontation).

¹³³ It is worth noting that the mere fact that multiple analysts participated in the testing does not necessarily require that all such analysts be signatories to the report. *E.g.*, *State v. Lopez*, 186 Ohio App. 3d 328, 2010-Ohio-732, 927 N.E.2d 1147, at ¶ 61, *appeal accepted*, 126 Ohio St. 3d 1512, 2010-Ohio-3331, 930 N.E.2d 331 (Ohio); see *Melendez-Diaz*, 129 S. Ct. at 2532 n.1; cf. *infra* Part III-B.

¹³⁴ See, e.g., *Melendez-Diaz*, 129 S. Ct. at 2542 n.14 (indicating that violations of the Confrontation Clause may be considered harmless error).

¹³⁵ *E.g.*, FED. R. EVID. 703. *But see* *People v. Dungo*, 98 Cal. Rptr. 3d 702, 713 n.14 (Cal. Ct. App. 2009) (noting that the Confrontation Clause supersedes the rules of evidence), *review granted, depublished by* 220 P.3d 240 (Cal. 2009).

¹³⁶ See *State v. Dilboy*, 999 A.2d 1092, 1104 (N.H. 2010) (collecting cases and discussing the various rules different courts have adopted to limit experts' ability to reveal the testimonial sources underlying their opinions). *But see* *People v. Rutterschmidt*, 98 Cal. Rptr. 3d 390, 413 (Cal. Ct. App. 2009) (citations omitted) (holding that no Confrontation Clause issue existed where "the report itself was not admitted" into evidence, because as long as the report merely provided a basis for the expert's opinion, it "was not admitted for its truth"), *review granted, depublished by* 220 P.3d 239 (Cal. 2009).

Many jurisdictions hold that expert opinions based on testimonial lab reports do not require the confrontation of anyone other than the experts themselves.¹³⁷ Some even allow experts to repeat the content of such reports in their testimony.¹³⁸ Of course, many states make the flexibility they grant experts in this regard contingent on the experts' involvement with the underlying tests,¹³⁹ or prohibit experts from basing their opinions solely on testimonial hearsay.¹⁴⁰

For example, Texas allows experts to base their testimony on testimonial hearsay, but does not permit them to reveal any underlying information that does not come from personal knowledge.¹⁴¹ North Carolina does not allow experts to base their opinions solely on testimonial hearsay unless they were personally involved in its creation,¹⁴² or to repeat such hearsay in court unless they also provide their own criticisms and conclusions.¹⁴³ Meanwhile, experts in Michigan state courts are not permitted to testify based on testimonial hearsay at all unless they have firsthand knowledge of the data and reasoning behind them.¹⁴⁴

In general, experts are given great leeway to testify based on variety of sources without these sources raising confrontation issues.¹⁴⁵

¹³⁷ See, e.g., *Rector v. State*, 681 S.E.2d 157, 160 (Ga. 2009), *cert. denied*, 130 S. Ct. 807 (2009); *State v. Mitchell*, 2010 ME 73, ¶ 47, 4 A.3d 478, 489–90; *Commonwealth v. Avila*, 912 N.E.2d 1014, 1027, 1029 (Mass. 2009); *Dilboy*, 999 A.2d at 1104 (N.H. 2010) (collecting cases); *Wood v. State*, 299 S.W.3d 200, 213 (Tex. Crim. App. 2009); *State v. Lui*, 221 P.3d 948, 955 (Wash. Ct. App. 2009), *reh'g granted*, 228 P.3d 17 (Wash. 2010).

¹³⁸ See *Pendergrass v. State*, 913 N.E.2d 703, 707–08 (Ind. 2009) (lab supervisor testified in addition to expert), *cert. denied*, 130 S. Ct. 3409 (2010); *State v. Mobley*, 684 S.E.2d 508, 511 (N.C. Ct. App. 2009) (expert gave her own criticism of the tests, and the defendant did not challenge the testing procedures); *Lui*, 221 P.3d at 957 & n.18 (experts revealed testimonial hearsay in order to explain the bases for their opinions, and the defendant had a right to a limiting instruction).

¹³⁹ See *People v. Frey*, No. 284647, 2009 Mich. App. LEXIS 1601, at *11–13 (July 28, 2009), *appeal denied*, 775 N.W.2d 788 (Mich. 2009); *State v. Galindo*, 683 S.E.2d 785, 787–88 (N.C. Ct. App. 2009); *Camacho v. State*, Nos. 2-07-322-CR, 2-07-323-CR, 2009 Tex. App. LEXIS 5975, at *68 (Crim. App. July 30, 2009).

¹⁴⁰ See *Dungo*, 98 Cal. Rptr. 3d at 708, 714; *Galindo*, 683 S.E.2d at 787–88.

¹⁴¹ *Martinez v. State*, 311 S.W.3d 104, 112 (Tex. Crim. App. 2010); *Wood*, 299 S.W.3d at 213.

¹⁴² *Galindo*, 683 S.E.2d at 787–88.

¹⁴³ *Mobley*, 684 S.E.2d at 511.

¹⁴⁴ *People v. Payne*, 774 N.W.2d 714, 726 (Mich. Ct. App. 2009) (citing *People v. Lonsby*, 707 N.W.2d 610, 620–21 (Mich. Ct. App. 2005), *rev'd on other grounds*, 771 N.W.2d 754–55 (Mich. 2009)) (non-precedential), *appeal denied*, 781 N.W.2d 839 (Mich. 2010); see *People v. Dendel*, 2010 Mich. App. LEXIS 1602, *38–39 (Aug. 24, 2010) (holding that a lab supervisor may not testify concerning the results of tests in which he was not personally involved).

¹⁴⁵ E.g., Ross Andrew Oliver, Note, *Testimonial Hearsay as the Basis for Expert Opinion: The Intersection of the Confrontation Clause and Federal Rule of Evidence 703 After Crawford v. Washington*, 55 HASTINGS L.J. 1539, 1555 (2004).

The mere fact that an expert relies on testimonial hearsay is generally not sufficient to create a Confrontation Clause violation.¹⁴⁶ Nonetheless, simply allowing any qualified expert to recite or rubber-stamp a testimonial report would render the holding in *Melendez-Diaz* of little practical significance.¹⁴⁷ Courts are loath to allow such abuse of the broad leeway given expert witnesses.¹⁴⁸ Rather, in order for such evidence to satisfy the Confrontation Clause, the opinion provided for confrontation must be the expert witness's own opinion, not that of the nontestifying analysts.¹⁴⁹ This fundamental principle has two implications.

First, this principle indicates that when the results of the tests are testimonial, an expert may testify as to those results only if the expert was actually involved in the tests such that any description of their results comes from the expert's own knowledge, and not just what he or she heard from others.¹⁵⁰ Permitting the expert to recite a testimonial report to which the expert was not a witness is little better than the notorious Marian examinations discussed by the Supreme Court, wherein the justices of the peace gathered information from the real witnesses and brought it into court¹⁵¹—the only difference is that here, the surrogate is not termed a “justice of the peace” but an “expert.” Although some states seem to allow such practices so long as the experts

¹⁴⁶ *E.g.*, *United States v. Johnson*, 587 F.3d 625, 635 (4th Cir. 2009), *cert. denied*, 130 S. Ct. 2128 (2010); *Oliver*, *supra* note 145, at 1560.

¹⁴⁷ *E.g.*, *Johnson*, 587 F.3d at 635 (“Allowing a witness simply to parrot ‘out-of-court testimonial statements of cooperating witnesses and confidential informants directly to the jury in the guise of expert opinion would provide an end run around *Crawford*.”) (quoting *United States v. Lombardozi*, 491 F.3d 61, 72 (2d Cir. 2007)).

¹⁴⁸ *E.g.*, *id.* at 635; *United States v. Steed*, 548 F.3d 961, 975 (11th Cir. 2008) (holding that experts’ ability to rely on inadmissible evidence “is not an open door to all inadmissible evidence disguised as expert opinion” (quoting *United States v. Scrima*, 819 F.2d 996, 1002 (11th Cir. 1987))); *Lombardozi*, 491 F.3d at 72.

¹⁴⁹ *E.g.*, *Johnson*, 587 F.3d at 635 (“The question is whether the expert is, in essence, giving an independent judgment or merely acting as a transmitter for testimonial hearsay. As long as he is applying his training and experience to the sources before him and reaching an independent judgment, there will typically be no *Crawford* problem.”); *State v. Dilboy*, 999 A.2d 1092, 1104 (N.H. 2010) (collecting cases); *Oliver*, *supra* note 145, at 1560 (“[A] confrontation violation likely will not exist [where] the expert’s opinion is truly original and a product of his special knowledge or experience, and the defendant can test its reliability by cross-examination of the expert.”).

¹⁵⁰ *See* *United States v. Turner*, 591 F.3d 928, 933 (7th Cir. 2010); *People v. Frey*, No. 284647, 2009 Mich. App. LEXIS 1601, at *12–13 (July 28, 2009), *appeal denied*, 775 N.W.2d 788 (Mich. 2009); *State v. Locklear*, 681 S.E.2d 293, 304–05 (N.C. 2009); *Hamilton v. State*, 300 S.W.3d 14, 21 (Tex. Crim. App. 2009); *Camacho v. State*, Nos. 2–07–322–CR, 2–07–323–CR, 2009 Tex. App. LEXIS 5975, *6–8 (Crim. App. July 30, 2009).

¹⁵¹ *Crawford v. Washington*, 541 U.S. 36, 44 (2004) (citations omitted) (discussing the infamous trials conducted by Queen Mary I as one of the reasons why the Founders decided to enshrine a right of confrontation in the Constitution).

give their own criticism of the report,¹⁵² the fact that a justice of the peace critiqued the witnesses' testimony (as may well have happened in at least some of the Marian cases¹⁵³) would hardly have softened the injustice of the Marian examinations. For such a report to be part of an expert's testimony, that report would have to be the expert's own analysis, not the work of a third party.¹⁵⁴ Additionally, the Federal Rules of Evidence will usually (but not always) prevent an expert from revealing such information.¹⁵⁵

What about the less problematic case in which the expert does not read the report into evidence outright, but does rely solely on assessments made by other analysts?¹⁵⁶ On the one hand, simply allowing an expert to repeat the findings of absent analysts would seem to contradict the aims of *Melendez-Diaz*.¹⁵⁷ On the other hand, statements made by an analyst to an expert may not be sufficiently formalized to meet Justice Thomas's standard as to what is testimonial.¹⁵⁸ Fortunately, these two aims can be reconciled, as Justice Thomas has indicated that the introduction of even non-formalized statements would violate the Confrontation Clause "if the prosecution attempted to use out-of-court statements as a means of circumventing

¹⁵² See *supra* note 123 and accompanying text.

¹⁵³ See *Crawford*, 541 U.S. at 44 (citations omitted) (mentioning that justices of the peace "certified" the results of their examinations under the Marian statute).

¹⁵⁴ *E.g.*, *Johnson*, 587 F.3d at 635; *Carolina v. State*, 690 S.E.2d 435, 437 (Ga. Ct. App. 2010) (distinguishing between an expert who testifies to admit a report by a non-testifying analyst and an expert who testifies as to her own conclusions from the data); *State v. Aragon*, 225 P.3d 1280, 1288–89 (N.M. 2010) (holding that while an expert may "express[] his own opinion based upon the underlying data that contributed to the opinion announced in the report[,] . . . the admission into evidence of reports containing the opinions of non-testifying experts is prejudicial error[]"); *Oliver*, *supra* note 145, at 1560.

¹⁵⁵ FED. R. EVID. 703 (allowing experts to reveal inadmissible data only if "the court determines that [the data's] probative value . . . substantially outweighs [its] prejudicial effect").

¹⁵⁶ See *Vega v. State*, No. 53752, 2010 Nev. LEXIS 35, at *14 (Aug. 12, 2010) (holding that a report by a non-testifying analyst may not be admitted based on the testimony of an expert who was not involved in the original analysis, but that an expert may testify to admit the underlying data and provide her own opinion based on that data).

¹⁵⁷ See *Melendez-Diaz*, 129 S. Ct. at 2536–37 (treating the right of confrontation as applying to the ones whose deceit or incompetence could lead to inaccuracies in the testimony).

¹⁵⁸ *People v. Vargas*, 100 Cal. Rptr. 3d 578, 587 (Cal. Ct. App. 2009), *review denied*, No. S178100, 2010 Cal. LEXIS 1451 (Feb. 3, 2010); see *People v. Rutterschmidt*, 98 Cal. Rptr. 3d 390, 412 (Cal. Ct. App. 2009) (quoting *Melendez-Diaz*, 129 S. Ct. at 2543 (Thomas, J., concurring)) (holding that Justice Thomas's concurrence prevents *Melendez-Diaz* from being applied to non-formalized reports), *review granted, depublished by* 220 P.3d 239 (Cal. 2009); see also *People v. Dungo*, 98 Cal. Rptr. 3d 702, 710–11 (Cal. Ct. App. 2009) (quoting *Melendez-Diaz*, 129 S. Ct. at 2532) (determining an autopsy report to be testimonial because it met both the formality test and the purpose test), *review granted, depublished by* 220 P.3d 240 (Cal. 2009).

the literal right of confrontation.”¹⁵⁹ To the extent to which the expert serves as a mere proxy for non-testifying analysts, even Justice Thomas would probably hold that that expert’s testimony violates the Confrontation Clause.

Thus, it seems that the Confrontation Clause requires an expert witness to perform his or her own review of the work contained in the report and formulate his or her own opinion on the matter.¹⁶⁰ Ideally, the expert should either rely solely on nontestimonial raw data and not the nontestifying analysts’ inferences from it,¹⁶¹ or be one of the analysts who has firsthand knowledge of the work done on the data.¹⁶² Ultimately, however, any conclusions reached by an expert must be the expert’s own, *not* that of the previous analysts.¹⁶³

CONCLUSION

Having reviewed the history of the Supreme Court’s recent Confrontation Clause jurisprudence, one can begin to get a picture of its implications for computerized evidence.

In terms of whether the evidence is testimonial, the distinction between computer-generated and computer-stored evidence that some courts have applied to the hearsay rule seems to apply equally well to the Confrontation Clause.¹⁶⁴ Mechanical declarants do not seem to meet the majority’s “primary purpose” standard as no observer would believe that a computer “intended” its output to be used for prosecution—the

¹⁵⁹ *Davis v. Washington*, 547 U.S. 813, 838 (2006) (Thomas, J., concurring in part and dissenting in part).

¹⁶⁰ *E.g.*, *United States v. Turner*, 591 F.3d 928, 933 (7th Cir. 2010); *United States v. Johnson*, 587 F.3d 625, 635 (4th Cir. 2009), *cert. denied*, 130 S. Ct. 2128 (2010); *United States v. Steed*, 548 F.3d 961, 976 (11th Cir. 2008); *United States v. Lombardozzi*, 491 F.3d 61, 72 (2d Cir. 2007); *Smith v. State*, 28 So. 3d 838, 855 & n.12 (Fla. 2009); *Neal v. Augusta-Richmond Cnty. Pers. Bd.*, 695 S.E.2d 318, 321–22 & nn.12–17 (Ga. Ct. App. 2010) (collecting Georgia cases); *State v. Dilboy*, 999 A.2d 1092, 1104 (N.H. 2010) (collecting cases); *Oliver*, *supra* note 145, at 1560. *But see* *State v. Mobley*, 684 S.E.2d 508, 511–12 (N.C. Ct. App. 2009) (holding that repetition of another scientist’s analysis acceptable where the expert also provided her own analysis). This conclusion may also be required by the Federal Rules of Evidence. *See* FED. R. EVID. 702 (stating that an expert witness may give an opinion only if “*the witness* has applied the principles and methods reliably to the facts of the case” (emphasis added)).

¹⁶¹ *See* *State v. Aragon*, 225 P.3d 1280, 1290 (N.M. 2010); *Hamilton v. State*, 300 S.W.3d 14, 21 (Tex. Crim. App. 2009).

¹⁶² *See* *People v. Payne*, 774 N.W.2d 714, 725–26 (Mich. Ct. App. 2009) (citing *People v. Lonsby*, 707 N.W.2d 610, 620–21 (Mich. Ct. App. 2005), *rev’d on other grounds*, 771 N.W.2d 754, 755 (Mich. 2009)) (non-precedential), *appeal denied*, 781 N.W.2d 839 (Mich. 2009); *Aragon*, 225 P.3d at 1291; *State v. Galindo*, 683 S.E.2d 785, 787–88 (N.C. Ct. App. 2009).

¹⁶³ *E.g.*, *Johnson*, 587 F.3d at 635; *Vann v. State*, 229 P.3d 197, 206 (Alaska Ct. App. 2010) (collecting cases and determining this to be the majority rule).

¹⁶⁴ *See supra* Part II.

mere ascription of intent to a machine seems unlikely this side of androids—nor do machine-generated statements meet any of the Supreme Court’s various definitions of “testimony.”¹⁶⁵ Similarly, putting a mechanical “declarant” on the witness stand for confrontation does not seem to be a valid application of the Confrontation Clause.¹⁶⁶ At a more fundamental level, machine-generated evidence is physical evidence, and its best founding-era analog would be physical evidence, which need not require any witnesses (except as necessary for authentication).¹⁶⁷

Where computerized evidence is testimonial, courts are divided as to whom the Supreme Court’s recent Confrontation Clause cases, and *Melendez-Diaz* in particular, require to testify.¹⁶⁸ Arguably the best approach is that the signatory of a testimonial report is the witness who bears that testimony, and that that signatory must be someone who can attest to the analysis based on personal knowledge.¹⁶⁹ On occasion, this may require multiple signatories, in which case all must testify.¹⁷⁰

A more attractive alternative for prosecutors might be simply to have an expert testify based on the results. While the courts are again divided on this issue, the best approach is that such testimony is permissible only if the reasoning involved is the expert’s own, and not simply the work of the original analysts.¹⁷¹ Additionally, an expert cannot testify as to the actual results or underlying data except based on firsthand knowledge of this analysis (which is the same sort of testimony normally required to admit those results).¹⁷²

In short, when dealing with computerized evidence, or other scientific evidence, the best rule is that whoever applied the intelligence and reasoning necessary to reach the conclusion—be it an expert witness, the original analysts, or simply the machines themselves—is the defendant’s “accuser” for purposes of the Confrontation Clause. If these accusers are human, the Confrontation Clause must be satisfied, but in cases where the only such witnesses are mere machine, it is quite absurd to propose a constitutional right to *interface* your accuser.

Erick J. Poorbaugh

¹⁶⁵ See *supra* text accompanying notes 85–92.

¹⁶⁶ See *supra* text accompanying notes 93–94.

¹⁶⁷ See *supra* text accompanying notes 95–116.

¹⁶⁸ See *supra* Part III-A.

¹⁶⁹ See *supra* Part III-A.

¹⁷⁰ See *supra* Part III-B.

¹⁷¹ See *supra* Part III-B.

¹⁷² See *supra* Part III-B.