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Inferences, Arguments, and Second Generation Forensic Evidence

ERIN MURPHY*

INTRODUCTION

A woman, lost in an unfamiliar neighborhood, stops a man on the street and asks him for directions. He jots them down on a note, but when she follows the directions to the destination, he reappears by surprise and then rapes and robs her. Police apprehend a suspect, and obtain from him a writing sample that replicates the writing on the note. Later, in the course of preparing for trial, the defense attorney asks the court to order the crime scene note turned over for independent examination by a handwriting analyst. When the defense expert concludes that the defendant is the probable author, the defense decides not to present the expert’s testimony, but nevertheless attacks the reliability of the government expert’s analysis at trial.

At this point, consider a range of scenarios that the government could undertake. It could:

- Elicit only evidence from its own expert that the defendant authored the note, and nothing further;
- Elicit evidence from its expert that nothing in the testing process disturbed the note, and so it remained available to the defense to conduct its own independent tests;
- Elicit evidence as above, adding that the defense did actually request and receive the note for the purpose of independent examination;
- Elicit evidence as above, only also call attention to the fact that the defendant’s expert was not called at trial;
- Elicit evidence as above, only also request an express inference that the failure to call the witness suggests that the

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1. The following hypothetical is loosely based on the facts of State v. Mingo, 392 A.2d 590, 591-92 (N.J. 1978).
testimony was hostile to the defendant's interest;

- Obtain an order precluding defense cross-examination altogether as lacking a basis, since the defense cannot produce any evidence in support of its contention that the government expert's conclusions are faulty;

- Issue a subpoena to the defense expert and call her to testify in its case in chief as to her conclusions;

- Issue a subpoena and call the defense expert, particularly eliciting evidence that the expert was chosen by and conducted the inquiry at the request of the defense, thereby bolstering the credibility of the expert and of the government's own conclusions.

What if the contested evidence was not a handwriting sample, but a DNA swab, or an available and demonstrably reliable fMRI test—should that change the analysis? Suppose the government in a rape case fails to conduct DNA testing of semen collected from a rape kit performed on the victim, due to lack of time or resources or mere initiative. When the defendant attacks the government's failure to test the evidence as grounds for acquittal, should the prosecutor be able to respond that the defense declined to test it as well, and expressly or implicitly suggest that the defendant must have therefore known that any such tests would be unfavorable? Should it matter whether the defense had an explicit right to conduct independent testing, but had not exercised it? Or whether an indigent defendant had requested funds to conduct independent testing, but had been denied? Or whether the tests in question were particularly costly, or time consuming? Should it matter whether the defendant's basis for attacking the government's results relies on a methodological complaint about the legitimacy of a forensic technique overall, or simply the manner in which the testing was executed in the particular case? In short, where physical evidence is available for testing in a criminal case, what are the boundaries of permissible argument for both the prosecution and defense?

Physical evidence is not a new phenomenon, and the presence of items amenable to scientific testing has long raised a host of complicated evidentiary and procedural questions for the legal system. Nowhere is this more true, or are partisan allegiances more pronounced, than in the criminal justice system. Despite its origins in the supposedly neutral discipline of science, it is well documented that forensic evidence is

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vehemently territorial. But although lines have long been drawn in the field of forensic science, the emergence of a “second generation” of scientific evidence has changed the terms of battle.

These kinds of procedural and evidentiary questions have become particularly common, and particularly salient, as second generation forensic evidence assumes an increasingly important role in the criminal justice system. The reasons may be manifold. It may be that such evidence simply appears in a greater number of cases overall, resulting in a greater likelihood that disputes arise. It may be that the enactment of “innocence protection” statutes, which grant the defendant an affirmative entitlement to test evidence before or after trial, engenders frustration when defendants fail to conduct such tests but nonetheless challenge the evidence at trial. After all, if a painless and reliable lie detector or DNA test were available, why would any falsely accused person not take advantage of the opportunity to demonstrate innocence? Or, it may simply be that prosecutors particularly bristle against adversarial attacks on proof that seems scientifically unimpeachable. Whatever the reason, the apparent rise in such conflicts seems to be transforming what has historically been only an occasional problem of evidentiary boundary setting into a pervasive question regarding the scope and standards of evidentiary argument with regard to this form of evidence.

This Article explores the question of the proper latitude to accord both the defense and prosecution when it comes to the range of available challenges and inferences made with regard to scientifically or technologically sophisticated evidence. Specifically, I address this question with an eye toward understanding how the particular characteristics of second generation scientific evidence should inform these determinations. Part I reviews cases in which the kinds of disputes relevant for this discussion were raised—without regard to the type of

4. Id. at 722–23 n.4.
5. Id. at 726–31. I have previously described such “second generation” evidence as defined by its breadth of application across offenses; scientific robustness; mechanical sophistication; reliance on databasing and investigative capacity; and propensity to raise issues related to privacy and proprietary information. Id. Examples include DNA typing, fMRI imaging, electronic location tracking, and data mining. Id.
6. Indeed, the emergence of these kinds of concerns with regard to DNA testing prompted the American Bar Association to convene a committee to examine the issue, and then promulgate an advisory standard. See ABA STANDARDS FOR CRIMINAL JUSTICE: DNA EVIDENCE § 5.4 (3d ed. 2007), available at http://www.abanet.org/crimjust/standards/dnaevidence.pdf.
7. See, e.g., D.C. CODE § 22-4132(c) (2002).
8. There is even a moniker for the effect that second generation scientific evidence purportedly has on jurors, namely the “CSI Effect”—after a television show in which forensic evidence solves the most intractable of problems. See, e.g., Simon A. Cole & Rachel Dioso-Villa, CSI and Its Effects: Media, Juries, and the Burden of Proof, 41 NEW ENG. L. REV. 435, 435–36 (2007) (describing taxonomy of “effects”).
forensic technique in question—and sets forth three general categories of claims raised. Part II identifies the particular legal doctrines that have been used to resolve such conflicts. Finally, Part III considers how the principles and policies that animate those doctrines might particularly resonate with reference to the unique characteristics of second generation evidence.

I. CASE EXAMPLES

Litigation over the permissible scope of argument regarding forensic evidence is not new. A review of the cases suggests a range of claims and issues, which I have distilled into three basic categories. Specifically, the cases embody dispute over: (1) appropriation of defense experts; (2) missing witness arguments; and (3) concession of guilt inferences.9

A. GOVERNMENT APPROPRIATION OF DEFENSE EXPERT

The first category of cases involves those in which the government seeks to call a nontestifying defense expert as its own witness—either on its own initiative or after the defense attacks the government's evidence. For instance, in People v. Speck, the government in a high-profile murder case called a fingerprinting expert retained (but not called at trial) by the defense to confirm the government's experts' conclusions.10 On appeal, the court rejected a claim of violation of the attorney-client privilege, noting that a "witness is not the property of either party to a suit and simply because one party may have conferred with a witness and even paid him for his expert advice does not render him incompetent to testify for the other party."11 The court further noted that the testimony was limited to "expert opinion" rather than any contents of conversations with the defense.12

Other courts have reached different conclusions. For instance, in Oines v. State, a drunk driving arrestee exceeded the legal limit on a police-administered breathalyzer test, and then requested transfer to a hospital where a blood sample was taken at his request.13 The sample was drawn and kept in state custody.14 In preparation for trial, the defense

9. I use the term "concession of guilt" here to distinguish purposefully between evidence of "consciousness of guilt," which typically relates to facts about the defendant's behavior rather than actions of legal strategy. See, e.g., KENNETH S. BROUN, 2 MCCORMICK ON EVIDENCE § 263 (6th ed. 2006) ("admissions by conduct"). I also do not use "admission of guilt" so as not to reference the evidentiary exception. Id.
11. Id. at 220–21. In a case involving defense retention of a psychiatric expert, the Alaska Supreme Court found a violation both of attorney-client privilege and the constitutional right to counsel in the government's subpoenaing and calling the uncalled defense expert as a witness. Houston v. State, 602 P.2d 784, 789–96 (Alaska 1979).
12. Speck, 242 N.E.2d at 221.
14. Id. at 885.
attorney had the blood independently tested by an expert, but when the results confirmed the breathalyzer, the attorney chose not to call the expert. The government, however, subpoenaed the expert and elicited the confirmatory testimony. Distinguishing the case from one in which the court had allowed the evidence because the defendant's request for "an independent test" was made on his own, rather than on the advice of counsel, the Alaska Court of Appeals held that the government's use of the expert violated the attorney-client privilege.

Similarly, in State v. Dunn, the trial court permitted the government to call two experts retained by the defense to conduct independent testing of the alleged narcotic in question because the experts had reached the same results as the witnesses for the government. Surveying the legal authorities cited by other courts, the appellate court rejected claims based on the Fifth Amendment self incrimination right, but held the action impermissible under either a work product privilege or the Sixth Amendment right to counsel.

As these cases suggest, courts have differed in their treatment of the issue of government appropriation of defense witnesses. Moreover, these treatments have addressed a range of potentially applicable legal doctrines.

B. GOVERNMENT ARGUING THAT DEFENSE ACTIONS SUPPORT MISSING WITNESS INFERENCE

The second category of cases are those in which the government seeks to elicit evidence that the defense sought and received an expert opinion, but did not present that expert at trial. The inference, either expressly drawn or by implication, is that the defendant's own expert's opinion hurt the defense position, which both bolsters the government's evidence and undermines any defense attacks on that evidence.

At the most basic level, cases in this category involve government elicitation of testimony that evidence was deliberately preserved and available for defense testing. A handful of courts have upheld the admissibility of such testimony. Similar in nature are cases such as

15. Id. at 885-86.
16. Id. at 886.
17. Id. at 886 (citing Russell v. Anchorage, 706 P.2d 687, 692 (Alaska Ct. App. 1985)).
18. 571 S.E.2d 650, 656-56 (N.C. 2002).
19. Id. at 658-59 ("[A]llowing the disclosure to the prosecution of a report prepared by a defense investigator would not violate the defendant's Fifth Amendment privilege which, 'being personal to the defendant, does not extend to the testimony or statements of third parties called as witnesses at trial.'" (quoting United States v. Nobles, 422 U.S. 225, 233 (1975))).
20. See, e.g., People v. Gray, 118 P.3d 496, 522 (Cal. 2005) (finding no reversible error where prosecutor elicited testimony that evidence was preserved for defense testing, and that in fact defense experts had retrieved evidence from government lab, and then argued in closing that failure to call experts suggested that their results were consistent with government testimony); People v. Success,
Commonwealth v. Evans,\textsuperscript{11} and People v. Bolden,\textsuperscript{2} in which the government elicited testimony from its own experts that defense experts—not called by any party at trial—had been actually present at the time of the government’s testing.\textsuperscript{3} Both courts held that the admission of the testimony was not in error.\textsuperscript{4}

For example, in Bolden, the government notified the defense that testing would destroy the entire sample, and so the defense contracted with an expert to be present to observe the testing.\textsuperscript{5} At trial, the defense called a different expert to attack the manner in which the government expert conducted the tests.\textsuperscript{6} In response, the government called the defense expert that had been present at the testing, who testified in a hearing outside the presence of the jury.\textsuperscript{7} Although that expert ultimately did not testify at trial, the government did cross-examine the testifying defense expert witness and elicit that the first, nontestifying expert had observed the test. In closing, the prosecutor then urged the jury to consider the defendant’s reasons for not calling the original expert in its assessment of the attacks made by the defense on the reliability of the tests.\textsuperscript{8} On appeal, the court rejected the defendant’s claims, finding that “[i]n deciding the significance of the failure of either party to call [the expert] as a witness, the jury could properly consider the information that the defense had hired [the expert] to do the testing.”\textsuperscript{9}

Other courts have followed analogous logic in reaching similar conclusions. In Evans, the court rejected an identical claim, noting that “[t]he prosecutor did not suggest to the jury that the defendants had a duty to call those experts, or that by failing to call them they were somehow admitting guilt.”\textsuperscript{30} Accordingly, the “evidence did not constitute a comment on the defendants’ right to remain silent.”\textsuperscript{31} Similarly, the court in Pope v. State found no violation of the work product privilege when the government elicited testimony about the

\textsuperscript{10} Commonwealth v. Evans, 778 N.E.2d 885, 896 (Mass. 2002).
\textsuperscript{11} People v. Bolden, 58 P.3d 931, 951–53 (Cal. 2002).
\textsuperscript{12} Bolden, 58 P.3d at 952; Evans, 778 N.E.2d at 896.
\textsuperscript{13} Evans, 778 N.E.2d at 896, addressed Fifth Amendment right of silence claims, whereas Bolden, 58 P.3d at 953, addressed claims of violation of due process, the attorney-client privilege, and effective assistance of counsel.
\textsuperscript{14} Bolden, 58 P.3d at 952.
\textsuperscript{15} Id. at 953.
\textsuperscript{16} Id. at 952.
\textsuperscript{17} Id. at 953.
\textsuperscript{18} Id. at 953.
\textsuperscript{19} Id. at 954–55.
\textsuperscript{20} Commonwealth v. Evans, 778 N.E.2d 885, 896 (Mass. 2002).
\textsuperscript{21} Id.
identity, "eminent" qualifications, and failure to dispute the conclusions of the state by a retained defense expert.\textsuperscript{32} Although the jury was not expressly told that the expert had been contracted by the defense, the prosecutor did elicit from two state DNA experts that they had delivered the materials to another expert, and that the other expert had not requested retesting of the evidence or disagreed in any respect.\textsuperscript{33} In closing, the state reiterated that testimony and argued that "if [the defense] had one person, one expert who knew anything about DNA and the testing procedures, they would have put somebody on that witness stand today."\textsuperscript{34}

Some courts have, however, rejected such arguments. In \textit{People v. Coddington}, the defense hired seven psychiatric experts to evaluate the defendant, but called only three as witnesses.\textsuperscript{35} The government learned of the nontestifying witnesses through jail sign-in sheets, and argued to the jury that the failure to call them as witnesses suggested that the experts had reached conclusions adverse to the defense.\textsuperscript{36} The court held that, while it was permissible to elicit evidence of nontestifying expert examinations, it violated work product privilege for the prosecutor to argue any adverse inferences from their absence.\textsuperscript{37} Similarly, in \textit{State v. Cloutier}, the court reviewed the prosecutor's elicitation of testimony that the defendant's representative had received blood samples from the state.\textsuperscript{38} Worrying that "such questioning could create a missing-test-result inference," the court nonetheless found no error because the government had not argued any adverse inferences in closing.\textsuperscript{39}

As these cases show, courts have proven relatively amenable to evidence put forward by the government, and arguments regarding the inferences to be drawn therefrom, with respect to nontestifying defense experts.

C. \textbf{Government Arguing That Defense Actions Support Concession of Guilt Inference}

The last category of cases contains those in which the government seeks to elicit evidence that the defendant had the opportunity or even right to conduct independent analysis or obtain an expert opinion about the contested evidence, but did not do so. The government thus effectively suggests that this failure to enlist expert assistance supports an

\begin{itemize}
\item \textsuperscript{32} 207 S.W.3d 352, 354, 366 (Tex. Crim. App. 2006).
\item \textsuperscript{33}  See id. at 356.
\item \textsuperscript{34}  Id. at 356-57.
\item \textsuperscript{35}  2 P.3d 1081, 1140-41 (Cal. 2000), overruled on other grounds by Price v. Superior Court, 25 P.3d 618, 633 n.13 (Cal. 2001).
\item \textsuperscript{36}  Id. at 1141.
\item \textsuperscript{37}  Id. at 1142.
\item \textsuperscript{38}  628 A.2d 1047, 1048-49 (Me. 1993).
\item \textsuperscript{39}  Id. at 1049.
\end{itemize}
inference that the defendant knew that such assistance would not be helpful, either because the defendant is in fact guilty or simply because the attacks by the defense on the evidence are not supportable.

For instance, in State v. Glynn, the defense attacked the government's failure to conduct any forensic tests at all. In response, the government argued that

the law says that the defendant has the right to test any item in evidence. You want a rape kit, you want sheets, here they are. Been sitting in the Sheriff's Office. Did the defendant have a DNA test performed? Did the defendant attempt to run the test that [defense counsel] says will exculpate her client? No. Two edged sword, isn't it, ladies and gentlemen?

The court rejected the defendant's claim on appeal, noting that "[o]n rebuttal, the prosecution had the right to answer the argument of the defendant."

Similarly, in Miller v. State, the government elicited testimony and made arguments concerning the failure of the defense to avail itself of the opportunity to test after the defense criticized the government's failure to test. The court held that such argument did not constitute impermissible burden shifting, but rather constituted a "proper response to the argument raised in defense counsel's closing." In State v. Ledet, the defense challenged the DNA results as compromised and erroneous. In response, the government argued that the defense could have hired its own expert and done independent testing. Finding no error in the government's argument, the court concluded that the government "was merely asking the jury to compare the State's evidence with the defendant's lack of evidence." The court in State v. Roman Nose, while expressing "concern[] about the prosecutor's question regarding the defense ability to retest the sample," ultimately found no abuse of discretion in the testimony because it arguably responded to the defense attack on the state's testing.

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41. Id.
42. Id.
44. Miller, 830 P.2d at 426.
46. Id.; accord People v. Reid, 592 N.W.2d 767, 776-78 (Mich. App. 1999) (finding it not improper burden shifting for prosecutor in closing to comment on defendant's failure to provide blood samples from wife to bolster defense theory); cf State v. Grice, 537 A.2d 683, 688-89 (N.J. 1988) (finding no error in trial court's statements suggesting that defendant and government equally shared burden of bringing forth scientific evidence).
47. 667 N.W.2d 386, 400 (Minn. 2003).
In contrast, however, the court in *Hayes v. State*, held it impermissible burden shifting for the prosecutor to comment on the defendant's failure to test blood stains, as well as to elicit testimony from the government's expert that he had received such requests from defense attorneys in the past.\(^4^8\) Finding such comments "prejudicial," the court observed that "'the state cannot comment on a defendant's failure to produce evidence to refute an element of the crime, because doing so could erroneously lead the jury to believe that the defendant carried the burden of introducing evidence.'"\(^4^9\)

II. **DOCTRINAL FRAMEWORKS**

Although I have grouped the manner in which these cases arise into three general categories, the courts have neither hewn to this typology nor have they resolved the questions raised in each case using a uniform doctrinal approach. Rather, there exists a scattershot of legal doctrines under which these kinds of questions appear to be resolved, without strict regard to whether the claim is presented as an appropriation, missing witness, or concession of guilt issue. Indeed, defendants raise a variety of claims across each category, and courts have ruled with equal breadth.\(^5^0\) This Part briefly examines the relevant doctrines in turn.

A. **CONSTITUTIONAL**

1. **Burden Shifting (Fifth Amendment)**

   It is axiomatic in our criminal justice system that the defendant is presumed innocent, and that the government bears the burden of proving its case. Neither of these entitlements appears specifically in the Constitution itself, but they are enshrined in the Due Process Clause of the Fifth Amendment as essential to the fabric of our adversarial system.\(^5^1\) Numerous cases have raised claims of improper burden shifting in response to government missing witness and concession of guilt type

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\(^4^9\) *Hayes*, 660 So. 2d at 265 (quoting Jackson v. State, 575 So. 2d 181, 188 (Fla. 1991)).

\(^5^0\) See, e.g., Houston v. State, 602 P.2d 784, 789-96 (Alaska 1979); Oines v. State, 803 P.2d 884, 886-87 (Alaska Ct. App. 1990); People v. Bolden, 58 P.3d 921, 950-54 (Cal. 2002); Commonwealth v. Evans, 778 N.E.2d 885, 896 (Mass. 2002); State v. Mingo, 392 A.2d 390, 394 (N.J. 1978). The primary exceptions are that concession of guilt claims do not raise Sixth Amendment right to counsel claims or work product claims and that appropriation claims tend not to raise Fifth Amendment self-incrimination claims. *But see* People v. Spiezer, 735 N.E.2d 1017, 1020-22 (Ill. App. Ct. 2000) (noting that the Fifth Amendment privilege against self-incrimination serves as a basis upon which courts have found that defense experts and expert materials need not be disclosed to the government).

\(^5^1\) See, e.g., *Speiser v. Randall*, 357 U.S. 513, 525-26 (1958) ("Due process commands that no man shall lose his liberty unless the Government has borne the burden of . . . convincing the factfinder of his guilt.").
arguments.\footnote{52} For example, a number of cases have grappled with concession of guilt arguments under the rubric of burden shifting, and concluded that such inquiries are generally permissible regardless of whether the government is attacking the defense’s failure to undertake corroborative or exculpatory testing, or whether the defense is attacking the government’s failure to test. In \textit{People v. Success}, the government asked the defense expert whether he had recommended that the questioned DNA samples be independently retested.\footnote{53} The court concluded that the burden was not improperly shifted, as the evidence “challenged the credibility of the testimony elicited from the expert by defense counsel on direct examination” and “directly challenged the defense’s alternative theory.”\footnote{54} In a similar case, a different court found no improper burden shifting because the questioning likewise “directly challenged the credibility of testimonial evidence elicited by the defense in support of its theory of the case.”\footnote{55} The court observed that “once the defendant advances evidence or a theory, argument on the inferences created does not shift the burden of proof.”\footnote{56} And in \textit{State v. Glynn}, the court found no error in the prosecutor’s argument in rebuttal that the defendant had not exercised his right to forensic testing, “noting that the defense had pretrial access to the physical evidence and could have produced its own DNA tests was clearly an attempt to respond to defense counsel’s closing argument regarding the lack of DNA evidence.”\footnote{57}

Other cases likewise reject burden shifting claims founded on arguments related to the defense’s failure to secure an expert to bolster its theory. For instance, in \textit{Benson v. State}, the defense attorney failed to apply for funding for an expert in light of the denial of his motion for funds for trial transcripts.\footnote{58} When the prosecutor argued that the

\footnote{52. Naturally, appropriation cases do not raise burden-shifting arguments, although a case could be made that appropriation of defense experts creates a presumption that the forensic evidence is correct, and thereby shifts the burden of disproving it to the defense.}
\footnote{54. Id. at *2.}
\footnote{55. People v. Reid, 592 N.W.2d 767, 777 (Mich. Ct. App. 1999).}
\footnote{56. Id.; accord State v. Lehr, 38 P.3d 1172, 1185 (Ariz. 2002) (en banc) (holding no burden shifting for government to ask its expert about a print card on file should an independent test be sought); People v. Lehmkuhl, 117 P.3d 98, 105 (Colo. Ct. App. 2004) (finding no error in arguing that best check against false positive is retesting and it was available to do so); State v. Harris, 892 So. 2d 1238, 1255 (La. 2005) (declaring it not improper to argue in rebuttal that the defendant never requested DNA testing); White v. State, 934 S.W.2d 891, 894-95 (Tex. Crim. App. 1996) (holding there is no burden shifting in government statement that defense could have retested after defense attacked evidence for contamination); Miller v. State, 830 P.2d 419, 425-26 (Wyo. 1992) (finding admissible over burden-shifting objection the prosecutor’s elicitation of rape defendant’s failure to test DNA evidence found at scene).}
\footnote{57. 653 So. 2d 1288, 1308-09 (La. Ct. App. 1995).}
\footnote{58. 636 A.2d 907, 910-11 (Del. 1994).}
defense's failure to call an expert evinced concession of guilt, the
defendant claimed improper burden shifting.\(^5\) The court denied the
claim, holding that "when an indigent defendant fails to make an
application for state funds, regardless of the perceived likelihood of
approval of the application, the defendant is barred from asserting that
an expert witness is unavailable for purposes of preventing prosecutorial
comment on the defense's failure to call an expert witness."\(^6\) Some
courts have even gone a step further, and found no reversible burden
shifting in such arguments even where the request for a defense expert
was denied.\(^6\)

In contrast to these cases, some courts have found such argument to
constitute an improper shifting of the burden. For instance, in \textit{Hayes v. State}, the court found improper the elicitation of testimony and
subsequent argument about the defense's failure to test the forensic
evidence.\(^6\) Examining the comments, the court concluded that the state
may have wrongly "led the jury to believe that Hayes had an obligation
to test the evidence found at the scene . . . and to prove that the hair and
blood samples did not match his own."\(^5\) The court further rejected the
argument that the defense attacks on the evidence somehow "invited"
comments, and noted that the curative instruction informing the jury that
the defense bore no "obligation to test the evidence," although it did
have an "opportunity," was inadequate, because "[o]pportunity' in this
context implies an obligation."\(^6\) The court in \textit{Essary v. State} also found
improper burden shifting in the government's commenting to the jury
about the failure to hear from a defense expert.\(^6\) The court observed that
"the only reasonable inference from that argument would be that the
State was telling the jury that if the criminalist's conclusions were invalid,
the defense would have produced evidence to the contrary," suggesting
that the defense had "a burden the defense does not bear."\(^6\)

\(^{59}\) \textit{Id.} at 910.
remarks were not directed at any particular witness's failure to testify but were directed at the
defense's failure to call a DNA expert to rebut the State's DNA evidence."); People \textit{v. McKinley}, 609
defense could have called own experts, because provoked or invited by defendant).

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\(^{64}\) \textit{Id.} at 28.
2. **Right to Silence (Fifth Amendment)**

The Fifth Amendment also gives rise to another source of authority for these kinds of challenges—namely, the Self Incrimination Clause. Indeed, the dual protections of due process burden shifting and the right to silence interweave in this particular context. The proscription on burden shifting relieves the defense of the responsibility of having to put forward any evidence or to disprove guilt (or prove innocence), whereas the self incrimination clause more narrowly ensures that the government’s efforts to adduce such proof exclude the compelling of evidence from the defendant’s own mouth.

In light of the intersection of these two doctrines, it is no surprise that cases have in fact treated them together. For example, in *State v. Lehr*, the court addressed a burden-shifting claim raised in response to the government’s elicitation from its expert of evidence that independent fingerprint examiners could have been retained by the defense. The court denied the claim, noting that “discussing a defendant’s failure to produce evidence is permissible so long as it does not constitute a comment on his or her silence.” Similarly, in *Commonwealth v. Evans*, the defendant argued that the government’s elicitation of evidence that defense experts were present at the time of government testing, and therefore “could have detected any errors in the testing procedures,” constituted improper burden shifting. The court, dismissing the claim, remarked that the government had not suggested “that the defendants had a duty to call those experts, or that by failing to call them they were somehow admitting guilt.” Thus, the comment did not infringe either due process or the right to remain silent.

In contrast, in *Essary v. State* the court rejected an argument based on the right to silence, observing that “[i]n order to fall within that prohibited area, the language must be manifestly intended, or of such a character that the jury would naturally and necessarily take it to be a comment on the defendant’s failure to testify and must be more than an implied or indirect allusion.” Because the evidence would come from

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Ignoring the defendant’s claim of improper burden shifting, the court ruled the comment impermissible as not based on the evidence—since no evidence had been adduced to show that the defendant was aware of the possibility of such tests—but found it to be harmless error. *Id.*

67. See U.S. Const. amend. V.
68. 38 P.3d 1172, 1185 (Ariz. 2002) (en banc).
69. *Id.*
70. 778 N.E.2d 885, 896 (Mass. 2002).
71. *Id.*
72. *Id.*
“another source, i.e., an expert,” it could not be considered as infringing the defendant’s privilege.\(^\text{74}\)

Other courts have addressed Fifth Amendment claims more squarely. In *State v. Ledet*, the defense attacked the government’s DNA tests as contaminated and unreliable.\(^\text{75}\) In response, the prosecutor argued that the defendant could have hired his own lab, his own lab. If he thought that these tests were so outrageous and so wrong; do you know that? His own lab. Like ReliaGene is just in Harahan, isn’t it? If he thought that those results would come back in favor of his client; did you know that? Think about that, because these tests, there was nothing wrong with these tests.\(^\text{76}\)

Upholding the comments as permissible, the court found they did not constitute a comment on the failure to testify but rather “merely ask[ed] the jury to compare the State’s evidence with the defendant’s lack of evidence.”\(^\text{77}\) The same conclusion was reached by the court in *State v. Peters*, which found no Fifth Amendment violation in the state expert’s assertion, “You know, if I were a defendant, and I were falsely accused as being the source of biological evidence, I would want to continue testing” until innocence was proven.\(^\text{78}\) The court in *Commonwealth v. Conkey*, however, reached the opposite conclusion, finding a violation of the state constitutional right to silence in the prosecutor’s argument that defendant’s refusal to submit palm prints for testing constituted concession of guilt.\(^\text{79}\)

3. Right to Assistance of Counsel (Sixth Amendment)

A third source of constitutional authority in these kinds of cases can be found in the Sixth Amendment right to counsel.\(^\text{80}\) Here, again, claims tend to be overlapping. For instance, in *United States v. Alvarez*, the defense attorney obtained funds for a psychiatric expert to examine the client’s sanity.\(^\text{81}\) After the expert found the defendant legally sane, the government called him at trial to help defeat the defense of insanity.\(^\text{82}\) On appeal, the defendant challenged the testimony, claiming a violation of his Fifth Amendment right to silence, the Sixth Amendment right to

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\(^\text{76}\) Id.
\(^\text{77}\) Id.
\(^\text{80}\) The Sixth Amendment provides that “the accused shall, . . . have the assistance of counsel for his defence.” U.S. CONST. amend. VI.
\(^\text{81}\) 519 F.2d 1036, 1045 (3d Cir. 1975).
\(^\text{82}\) Id.
effective assistance of counsel, and the attorney-client privilege. Dismissing the Fifth Amendment claims because the disclosures were not compelled, the court upheld the Sixth Amendment challenge, recognizing that an “attorney must be free to make an informed judgment with respect to the best course for the defense without the inhibition of creating a potential government witness.”

The court in *State v. Mingo* confronted a similar situation and found error in the court’s allowing the government to subpoena and elicit evidence from the defendant’s uncalled handwriting expert. The court first cited the need for defense counsel to exercise “full investigative latitude in developing a meritorious defense on his client’s behalf,” and worried that “[i]f the confidentiality of [expert] advice cannot be anticipated, the attorney might well forego seeking such assistance, to the consequent detriment of his client’s cause.” Likening the interest to that vindicated by the attorney-client privilege, the court found an imperative in “safeguard[ing] the internal strategic processes of the defense” by assuring that the attorney is “completely free and unfettered in making a decision as fundamental as that concerning the retention of an expert to assist him.” The court in a similar case, *State v. Dunn*, reached an identical conclusion, adding that defense attorneys might not only be deterred, but they might also “be motivated to hire only those experts which they have reason to believe will lean their way,” which would hamper—not aid—the search for truth.

To the contrary, the court in *Noggle v. Marshall* found that the Sixth Amendment did not preclude the government from calling the nontestifying defense expert as its own witness. The court found it undesirable “to canonize the majority rule on the attorney-psychiatrist-client privilege and freeze it into constitutional form not amenable to change.” And in *People v. Bolden*, the court found no violation of the

83. Id. at 1045, 1047.
84. 392 A.2d 590, 592–94 (N.J. 1978); accord Houston v. State, 602 P.2d 784, 789 (Alaska 1979) (“The effective assistance of counsel with respect to the preparation of an insanity defense demands recognition that a defendant be as free to communicate with a psychiatric expert as with the attorney he is assisting.”); Hutchinson v. People, 742 P.2d 875, 876 (Colo. 1976) (finding Sixth Amendment violation in trial court’s “decision to permit the prosecution to call the defense-retained expert in its case-in-chief”); cf. Prince v. Superior Court, 10 Cal. Rptr. 2d 855, 858 (Cal. Ct. App. 1992) (finding Sixth Amendment violation in trial court order to split evidentiary sample, and testing results, between government and defense, noting that “while it is true the goal of the judicial process is to find the truth, allowing the defense to conduct an independent test of the DNA will not unfairly prejudice the People or result in injustice”).
85. Mingo, 392 A.2d at 592, 595.
86. Id. at 595.
88. 706 F.2d 1408, 1413–14 (6th Cir. 1983) (dismissing *Alvarez* as having “constitutional overtones” but not truly “concerned with defining the scope of constitutional guarantees”).
89. Id. at 1414.
Sixth Amendment in a missing witness situation. In that case, evidence was admitted that a defense expert had witnessed the contested testing. The court also found no violation in the government's argument that the defendant's failure to call that witness should be taken into consideration.

B. STATUTORY OR EVIDENTIARY

Lastly, perhaps the most common doctrine for resolving these kinds of cases—whether of the appropriation, missing witness, or concession of guilt variety, is the work product doctrine derived from the attorney-client privilege. In fact, many of the cases ultimately decided on work product or privilege grounds initially presented Fifth or Sixth Amendment claims.

For example, in United States v. Walker, the government sought to call the experts retained by the defense to review the government's ballistics evidence—whom the defense declined to call in their own case—in order to bolster the conclusions testified to by the government expert. The court rejected the government's effort on numerous grounds, including the "practical application of the 'work-product' doctrine."

Noting the similarities between the values protected by this common law doctrine and the constitutional right to counsel, the court declared that "[a]t its core, the work-product doctrine shelters the mental processes of the attorney, providing a privileged area within which he can analyze and prepare his client's case." Calling the doctrine, "an intensely practical one, grounded in the realities of litigation in our adversary system," the Court further observed that "absent such an area of qualified privilege . . . a criminal defendants' preparation can only be crippled by the prospect of creating an unfavorable witness every time he attempts to obtain an unbiased assessment of the government's evidence." Thus, the privilege operated to bar the government's

90. 58 P.3d 931, 952–53 (Cal. 2002).
91. Id.
92. Id. at 954. The court considered the latter point relevant for "bias." Id.
93. A fraction of cases resolve these kinds of issues on other evidentiary grounds, for instance the "logical witness" rule, see, e.g., People v. Wash, 861 P.2d 1107, 1137 (Cal. 1993), or as a form of "admission-by-conduct," Edward J. Imwinkelried & D.H. Kaye, DNA Typing: Emerging or Neglected Issues, 76 WASH. L. REV. 413, 466–71 (2001) (providing overview of issue and advocating generally for limited commenting).
95. Id. at 864.
96. The cardinal expression of the doctrine, which is embodied to some extent by Federal Rule of Civil Procedure 26(b)(3), is found in Hickman v. Taylor, 329 U.S. 495, 509–10 (1947).
98. Id.
appropriation of the defendant's uncalled expert. The court in Commonwealth v. Kennedy reached the same conclusion on similar facts, reasoning that allowing the government to call defense experts would "unjustifiably hamper[]" the defense by placing attorneys in the "unenviable position of independently investigating evidence that may exonerate their clients, while, at the same time, risking the creation of evidence against their clients."100

The missing witness cases are more divided. In Pope v. State, for example, the court rejected a work product privilege claim that arose from the government's questioning of its experts as to their sharing their conclusions with a renowned expert retained by the defense.101 The court declared that the state's consulting-expert privilege was "intended to be only 'a shield to prevent a litigant from taking undue advantage of his adversary's industry and effort, not a sword to be used to thwart justice.'"102 Finding that the identity and eminence of the defense expert was information in the public domain and therefore not protected, along with the fact that the defendant did not call the expert as a witness at trial, the court found the privilege inapplicable.103

In contrast, in People v. Coddington, the court found a violation of the privilege in the government's questioning of witnesses as to the existence of other nontestifying defense experts that had evaluated the defendant.104 Resting its conclusion on the work product doctrine, the court observed that the privilege

reflects 'the policy of the state to (1) preserve the rights of attorneys to prepare cases for trial with that degree of privacy necessary to

99. Id.; see also United States v. Alvarez, 519 F.2d 1036, 1046 (3d Cir. 1975) (addressing claims both in terms of effective assistance of counsel and attorney-client privilege); People v. Spiezer, 735 N.E.2d 1017, 1025 (Ill. App. Ct. 2000) (reviewing various doctrines and stating that "we are persuaded by the holdings from all the foregoing case law" across a variety of doctrines, but ultimately concluding that "the work product doctrine is the proper basis of such protection"); State v. Mingo, 392 A.2d 590, 594 (N.J. 1978) ("We think it makes no difference whether the principle calling for vindication in such a situation is to be denominated the effective representation by counsel or the attorney-client privilege."); State v. Kociolek, 129 A.2d 417, 423–25 (N.J. 1957).


101. 207 S.W.3d 352, 363–64 (Tex. Crim. App. 2006); see also People v. Speck, 242 N.E.2d 208, 221 (Ill. 1968) ("A witness is not the property of either party to a suit and simply because one party may have conferred with a witness and even paid for his expert advice does not render him incompetent to testify for the other party.").

102. Pope, 207 S.W.3d at 359 (quoting Tom L. Scott, Inc. v. Melihany, 798 S.W.2d 556, 559 (Tex. 1990)).

103. Id. at 363–64.

encourage them to prepare their cases thoroughly and to investigate not only the favorable but the unfavorable aspects of the case, and (2) to prevent attorneys from taking undue advantage of their adversary's industry and efforts.\textsuperscript{105}

The prosecutor's missing witness inferences, therefore, "contravened that policy."\textsuperscript{106}

III. THE SECOND GENERATION CONSIDERED

As the foregoing Part elaborates, a variety of overlapping doctrines have been invoked to address the concerns raised when the government appropriates a defense witness or argues that the failure of the defense to consult or call an expert leads to a proper inference of the defendant's guilt. As the very existence of such doctrinal overlap suggests, the legal rules that have been cited to resolve such concerns share many underlying values.\textsuperscript{107} This Part reviews those values, and asks how the distinctive characteristics of second generation evidence might affect their consideration. In short, this Part observes the particular temptation to succumb to such arguments with regard to technologically sophisticated and robust forms of proof, but argues that their unique characteristics in fact counsel greater circumspection in fixing the range of permissible argumentation and inference.

I have previously observed that "second generation" techniques exhibit traits that distinguish them from their simpler, "first generation" counterparts.\textsuperscript{108} This "second generation" includes forensic methods such as DNA typing, fMRI imaging, or biometric scanning.\textsuperscript{109} Unlike their first generation counterparts, these techniques tend to apply broadly across a range of offenses, be scientifically and technically robust, entail mechanically sophisticated equipment, be proactive in their investigative capacity, and raise concerns of privacy and proprietary information.\textsuperscript{110}

These characteristics of second generation techniques make witness appropriation, missing evidence, and concession of guilt arguments especially tempting. The knowledge that deeply contested questions—whether regarding the perpetrator's identity or the ultimate question of guilt—might be able to be resolved conclusively by a scientific test cannot help but strain the patience of those whose mission it is to seek truth. After all, it must feel all but intolerable to have to stand idly by as

\begin{itemize}
\item\textsuperscript{105} Id. at 1142 (quoting CAL. CIV. PROC. CODE § 2018(a) (West 1998) (repealed 2004)).
\item\textsuperscript{106} Id.
\item\textsuperscript{107} For purposes of convenience, this Part refers to the legal entitlements as "Fifth and Sixth Amendment rights," although technically the attorney-client privilege and work product doctrine—while an off-shoot of the Sixth Amendment right to counsel—derive from nonconstitutional authorities.
\item\textsuperscript{108} See Murphy, supra note 3, at 726–31.
\item\textsuperscript{109} Id.
\item\textsuperscript{110} Id.
\end{itemize}
a defendant launches an attack on seemingly reliable scientific evidence while refusing to avail himself of the opportunity to test that evidence independently and thereby prove his innocence.

In addition to being tempting, such arguments may also become more and more common. The first characteristic of the second generation—the breadth of application—suggests that such evidentiary disputes might be expected to come up more frequently. Of course, forensic evidence has historically played a significant part in criminal cases, but that role is likely only to increase as the second generation of scientific evidence matures. Already, new second generation techniques like DNA typing, data mining, and electronic location tracking have been relied upon to prove a defendant's guilt. And it might not be long before even more advanced techniques—such as highly reliable lie detector machines or long distance iris scanning devices—become equally common forms of proof.

Indeed, simple anecdotal observation of the research conducted for this article suggests that a large percentage of cases raising claims of improper appropriation or argument emerged in cases involving newer technologies like DNA testing. Of course, the disproportionate influence may be simply that DNA evidence is presented in a larger percentage of cases generally, because it functions across the breadth of case types and is so highly probative. But whatever the reason for an apparent increase in the number of cases raising claims related to the evidentiary import of forensic testing decisions, it appears that such disputes may well be on the rise. In fact, just recently the American Bar Association convened a committee to consider, and ultimately promulgate, a standard treating this topic.

In sum, as second generation forensic evidence occupies a more central role in the adjudication of criminal cases, the evidentiary implications of the defense decision making regarding such evidence will likewise become more important. To date, none of the cases discussing the appropriation, missing witness, or concession of guilt arguments made by the government—or contemplating the constitutional values at stake when such actions occur—have considered the question in light of

111. Id. at 731-44 (discussing case example of DNA typing).
112. Id. at 723-24, 728-29.
113. See Greely & Illes, supra note 2; Erin Murphy, Paradigms of Restraint, DUKE L.J. (forthcoming Mar. 2008) (discussing iris scanning technologies); Margaret Talbot, Duped, New Yorker, July 2, 2007, at 52-61 (discussing fMRI imaging, including a new company called “No Lie MRI” that through a very limited set of experimental studies purports to achieve 90% accuracy).
114. Psychiatric exams also constitute a sizeable percentage of the cases uncovered in this research effort.
115. Murphy, supra note 3, at 731-38. Of course, the very probativeness of such evidence might also make such cases less likely to be reported, as many would be expected instead to plead out.
116. ABA STANDARDS FOR CRIMINAL JUSTICE, supra note 6.
the particular characteristics of this second generation. This Part endeavors to remedy that.

A. PRESERVATION OF AN AUTONOMOUS DEFENSE FUNCTION IN AN ADVERSARIAL SYSTEM

The notion that lawyers require full freedom to investigate a case without fear of adverse consequences underpins almost all of the doctrines discussed in the preceding Part. For instance, the right to effective assistance of counsel and the attorney-client privilege both explicitly rest upon the principle that the full realization of the defense function, and therefore the adversarial system itself, requires the recognition and protection of a zone of confidentiality to pursue lines of investigation and discuss strategy away from the intruding eyes of the government.

Even the Fifth Amendment injunctions against burden shifting and self incrimination serve to fulfill this need to preserve the integrity and freedom of the defense function. Without such rules, the government could simply demand that the accused tender all the evidence in its possession—whether inculpatory or exculpatory. And if that were the case, then even an innocent accused would hesitate to pursue avenues of investigation with uncertain ends. The right to remain silent and put the government to its proof does not just protect the guilty from uttering confessions; it also, arguably most importantly, protects the innocent from unwittingly building the government’s case against them. For instance, it may be that the defense turns up a witness who places the defendant at the scene when someone else fired the fatal shots, but if the government cannot adduce its own evidence, then our system leaves it up to the defense to determine whether to disclose its information. Otherwise, the affirmations of the defense might cloud important weaknesses in the government’s case. More troubling, the knowledge that efforts to investigate could be used against the defendant will discourage any such efforts at all.

Encroachment upon defense autonomy by allowing appropriation, missing evidence, or concession of guilt arguments therefore merit careful attention. In particular, the peculiar characteristics of second generation forensic evidence demand express acknowledgement in any assessment of the impact that such arguments have on the preservation of the underlying value of an autonomous defense function.

For example, the methodological robustness and mechanical

sophistication of second generation evidence makes it both susceptible to such arguments and poorly suited to them. Forensic evidence differs from other forms of proof. The statement of a witness, or the presence of the victim’s property in the defendant’s house, speak as plainly to the lay person as they do to the lawyer. A defense lawyer confronted with such evidence need not consult others to ascertain its fundamental import—the evidence can be apprehended, and tested, without any particular expertise. Even a “first generation” method like handwriting analysis or ballistics is fairly readily ascertainable—a layperson can look at two images and make an independent determination that two grooves or loops look identical.

But a second generation form of proof is not so readily comprehensible. The DNA electropherogram or fMRI image cannot be as easily appraised. As a result, the determination to secure expert assistance is as much an effort to understand the evidence as it is to challenge it. And understanding evidence is the duty of every lawyer and therefore not an appropriate basis of any permissible adverse inference.

In addition to the complexity of such evidence, another trait of forensic evidence renders arguments about the decision to test or not inappropriate: the government’s exclusive access to physical evidence makes truly independent testing of any forensic evidence difficult.

Forensic evidence, regardless of its level of sophistication, is typically under the peculiar control of the government. Physical items are stored by police departments with (properly) strict rules about access to materials. In contrast, the defense can privately conduct an investigation during which it talks, for instance, to fifteen witnesses who bolster the state’s case in the hopes of finding one that does not.

Thus, unlike interviewing a human witness or mapping a processed crime scene, it is impossible for the defense to examine physical evidence without first alerting the government of its wishes. Even if the defense secures access to a physical specimen through an in camera motion, the government will often learn that the defense has expressed some interest in the item by the simple fact that it must hand over the evidence to a court representative. A defendant cannot simply conduct a test without notifying the government of its intentions. Indeed, many jurisdictions

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118. The literature on burden shifting well represents this idea. See, e.g., Barbara Underwood, The Thumb on the Scales of Justice: Burdens of Persuasion in Criminal Cases, 86 YALE L.J. 1299, 1333–36 (1977) (noting relationship between self incrimination and burden rights, and observing that burden of production—but not persuasion—might be appropriately assigned to defendant where defendant has peculiar access to information).

119. See, e.g., Walters v. Superior Court, 95 Cal. Rptr. 2d 880, 880–81, 883 (Cal. Ct. App. 2000) (finding unlawful an order issued by a criminal trial court to allow defense inspection of evidence held by police department and ordering “the department not to advise anyone except the defense of the testing or the name of the party doing the testing until the preliminary hearing”).
require the defendant to petition the court not only to remove the evidence for testing, but also for the funds necessary to secure the expert. It is perhaps telling that many of the government appropriation cases came about because the government, in turning over the physical evidence to the defense expert, at the same time issued a subpoena. Rules that allow comment on the defense's investigation, therefore, simply exploit the government's unique position as both prosecuting entity and gatekeeper of access to relevant evidence.

Failing to wholly insulate the defendant's decision to subject such evidence to external appraisal places the defense in the untenable position of choosing to forego finding the "one" good witness in order to avoid turning up the bad fifteen. Without protection from government use of defense findings, the determination of the defense not to obtain any expert assistance no more constitutes the defendant's endorsement of the government's conclusions than would the defense's failure to interview witnesses it knew it would have to disclose if it was to the government's benefit. In order to protect the defense's incentive and interest in understanding and contesting the government's evidence, then, courts must safeguard the defense's ability to generate without penalty some opinions adverse to its case.

Moreover, with particular regard to second generation methods, their databasing, proprietary, and privacy-related characteristics make the government not only the party able to obtain and then seclude such evidence, but often also grants it total control over the mechanisms of analysis. For instance, in the case of a DNA match, the government may not only control the crime scene items that were used for testing, but also have exclusive domain over the database used to assign a "match" to the defendant or the primer sequences used to carry out the actual tests. A DNA defense expert is therefore unlikely to fully replicate tests performed by the government, or to conduct its own search of a database. And even where such complete authority is absent, the mechanical sophistication of second generation techniques may make access to independent experts more difficult, because fewer such experts exist. The lack of a robust external community, therefore, means that the failure of the defense to offer affirmative contrary evidence constitutes less of a signal that any attack on the evidence is hollow than

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120. Murphy, supra note 3, at 731 & nn.212–13.
122. Murphy, supra note 3, at 751–56.
123. Id. at 753–56.
it is a symptom of the dysfunction that afflicts the practice of forensic evidence.

In short, to permit appropriation, missing evidence, or concession of guilt arguments by the government prejudicially and unjustifiably ignores the lopsidedness of the field of forensic evidence. And this does not change as a result of the defense’s trial strategy. By illustrative comparison, imagine that the government turned over documents written in Farsi to an English-speaking attorney. The government provides its translation, which inculpates the defendant. The attorney arranges to have them translated as well, and the independent translator reports that one word could have two different meanings—one that inculpates the defendant, and one that does not. At trial, the government introduces its translation, and the defense attorney on cross-examination elicits the possible dual meanings of the contested word. The government expert acknowledges the contrary meaning, but stands by the original interpretation.

At this point, the defense attorney may choose not to call the defense expert, who can do no more than repeat both the defendant’s good (translation may be wrong) and bad (translation may be right) views of the evidence already admitted. Yet that by no means suggests that the defense expert’s assistance was futile, or that it confirmed the government’s interpretation. It would be wrong to allow the government to then argue that the defense’s decision not to put on its expert constitutes a concession by the defense that its argument is weak or bogus, much less that it bolsters the government’s view. Moreover, had the attorney altogether failed to get the document translated, it would be wrong to allow an inference that that decision amounts to a concession of guilt on the part of the defendant. If anything, it should raise concerns about the attorney’s performance of the attorney’s duties.

In sum, the challenge should stand—or fall—on its own merits, without bolstering from arguments that the attorney either failed to seek assistance or sought assistance but did not introduce evidence as a result of it. Courts surely would hesitate before allowing the government to

124. Of course, this is the standard for the typical missing witness or concession of guilt argument in other contexts. If the evidence in question is not peculiarly available to the party that failed to make use of it, then the opposing party—who could have elicited such evidence themselves—may not argue any adverse inferences. See, e.g., Estep v. Commonwealth, 64 S.W.3d 805, 809 (Ky. 2002) (holding it error to instruct jury that missing evidence could be inferred to be adverse to defendant, since such instructions are intended only to cure due process problem of missing exculpatory evidence); Eley v. State, 419 A.2d 384, 387 (Md. 1980) (finding defendant’s missing evidence argument appropriate because the evidence is peculiarly in the government’s control, noting that it is “plainly unreasonable to impose upon a defendant the burden of cross examining the police or of calling the appropriate personnel to the stand when that action might well result in evidence adverse to his interest”); State v. Laurent, 744 A.2d 598, 602-03 (N.H. 1999); cf. GLANVILLE WILLIAMS, CRIMINAL LAW: THE GENERAL PART 881, 903 (2d ed. 1961) (noting that burden of production might fall to defense where information
elicit evidence that the defendant visited the crime scene, but did not introduce its own photos, or talked to many witnesses, but did not call every one of them. Such arguments would simply open the door to a series of cumbersome, prejudicial, and likely tangential questions as to why the defense instead relied on the government's photographs or witnesses in making its attack. To suggest that the mere act of seeking consultation with regard to complicated forensic evidence—or not seeking it—should open the door to government appropriation, missing witness, or concession of guilt comments is to both permit unfounded speculation into defense strategy while also forcibly relegating the defense to ignorance, precisely the opposite of the values enshrined by the Constitution.

B. RESOURCE DISPARITIES

The values underlying the claimed entitlements discussed in Part II also find expression in the notion that structural inequities between the resources of the government and the defense require correction in terms of presentation of proof.\textsuperscript{125} The problem of oppression and state coercion pervades criminal justice. For instance, the Fifth and Sixth Amendments protect the individual from the potential oppression of the state apparatus by requiring that the government meet its burden without relying upon the defendant for proof. One variation on this theme is the desire to discourage one party from free riding on the work or labor of another.

Second generation evidence renders these concerns particularly acute. Indeed, the peculiar qualities of this kind of evidence, when compared to their first generation counterparts or other forms of evidentiary proof, distinctly advantage the government against the defense. The intellectual, tangible, and financial resources required to thoroughly appraise second generation evidence are particularly available to the government, and in turn are difficult for the defense to attain.

First, appraisals of second generation proof entail access to intellectual resources. Again, unlike the witness on the street or even a rudimentary form of forensic evidence, analysis of a second generation technology demands technical knowledge and expertise.\textsuperscript{126} To verify or probe such evidence typically requires specialized knowledge and skills beyond that required of the average attorney. But whereas the government has the entire apparatus of the forensic laboratory system at its disposal to conduct further testing or answer the prosecutor's


\textsuperscript{126} Murphy, supra note 3, at 727.
questions, the defense must content itself with whatever independent
intellectual resources it can access. Absent those resources, which
frequently are both fewer in number and greater in expense as compared
to the government, the evidence remains impenetrable.

Second, assessing second generation evidence demands access to no
small measure of tangible resources. As has previously been observed,
second generation techniques are characterized in part by their
mechanical sophistication and database dependency. They also
frequently implicate important issues of privacy and the protection of
proprietary information. These qualities compound the general problem
of resource inequity in the criminal justice system. A defendant may not
be able to pursue a claim or prove a point for no other reason than that
she lacks access to the physical equipment—say, a computer database or
set of proprietary documents. Indeed, the defendant may be unaware
that such items even exist.

Thirdly, second generation forensic evidence requires financial
resources. Although all forms of criminal investigation have the potential
to drain a defense attorney's coffers, enlisting the kind of experts and
equipment necessary to investigate second generation evidence is
particularly draining. Buying the time of a highly educated, technically
sophisticated expert is expensive; access to proprietary technologies may
be difficult; and the operation of equipment may be costly. These high
costs may in turn decrease the likelihood that access to such expertise
will be subsidized by the state for an indigent defendant, and so attorneys
may wisely elect to spend their time on other aspects of the case rather
than pursue efforts to secure funding that is unlikely to be forthcoming.

In sum, the intellectual, tangible, and financial resource disparities
between prosecution and defense with regard to second generation
evidence underscore the need to fortify the values of the Fifth and Sixth
Amendments. If the government cannot take the shortcut of proving its
case against the defendant by arguing failure to prove innocence, then
surely it should not be permitted to take the same shortcut by arguing

127. Id. at 745.
128. Id. at 749–51, 753–56.
129. Cf. State v. Ashby, 567 N.W.2d 21, 28 (Minn. 1997) (holding that while government's
comment on defendant's failure to do DNA testing did not constitute impermissible burden shifting, it
was nevertheless error because no evidence had been introduced to show that the defendant was even
aware that such tests were possible).
130. Murphy, supra note 3, at 749–51, 753–56.
defendant's argument that as an indigent previously denied funds for trial transcripts, a request for
expert funds would have been futile and holding that "when an indigent defendant fails to make an
application for state funds, regardless of the perceived likelihood of approval of the application, the
defendant is barred from asserting that an expert witness is unavailable for purposes of preventing
prosecutorial comment on the defense's failure to call an expert witness").
guilt inferences based on failure to undertake certain investigative approaches. This is particularly true where such approaches—namely, second generation forensic testing—likely represent a far greater strain on defense intellectual, tangible, and physical resources than more mundane forms of investigation. Courts should hesitate before allowing the government to exploit this disparity—whether by permitting appropriation of defense experts or comment and argument related to the defense’s failure to present a retained expert or to retain an expert at all.

C. Truth Seeking and the Preservation of a Margin of Error in Favor of the Defense

Another value broadly enshrined in the rights to counsel, silence, confidential communication, and the presumption of innocence is that of truth seeking and the inevitability of a margin of error in all decision-making systems. Each of these constitutional entitlements pays fealty to the notion that it is better to err on the side of acquittal over conviction, and that the best mechanism for ascertaining truth is to require the government to seek reliable extrinsic evidence of the defendant’s guilt.

The paramount importance of an exceptional safeguard against wrongful conviction particularly arises with respect to cases involving second generation forensic evidence because such evidence may constitute the strongest evidence—or even the only evidence—of guilt in the case. The investigative capacity of second generation techniques means that they can isolate and identify a suspect proactively, and courts have approved convictions based only on forensic evidence as well.

In light of the potency and singularity of second generation forensic proof, it is far too threatening to the delicate balance of interests to allow the government to bolster its use of such evidence by appropriating a nontestifying defense expert or by making arguments based on the failure of the defense to either call or consult an expert. A jury in such a situation might already be little disposed, due to the complexity and technical nature of second generation evidence, to undertake the kind of

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132. This subsection might be amplified by a section related to pragmatic concerns such as juror confusion or usurpation of the jury role, but because those are less structural in nature—and might be effectively managed through proper instructions—I set them aside for now.

133. See, e.g., Speiser v. Randall, 357 U.S. 513, 525-26 (1958); Williams, supra note 124, at 871 (“The philosophy underlying the rule is the oft-quoted maxim that it is better that ten guilty persons should escape than one innocent suffer.”); Wilson, supra note 125, at 731-32 (remarking that the presumption of innocence and allocation of the burden to the government “creates an inevitable margin of error” in favor of the defense).

134. Murphy, supra note 3, at 738-44.

135. Id. at 742-43.
searching examination that should be the standard in every case. To permit the government to effectively usurp any adverse defense claims by proffering such inferences creates too great a temptation to the jury to abdicate its fact-finding responsibility altogether.136

Indeed, incursions on this truth-seeking function of the adversarial system may be additionally troubling to the extent that we rely on adversarial processes to uncover defects in evidence. In the case of second generation sciences, independent analysis or testing may be hard enough to come by due to the paucity of experts or the high cost and complexity of the techniques.137 But such testing is far less likely to occur if the defense knows that if the defense consultation ends up confirming the government’s conclusions, a later argument at trial will be fatal to success.

Indeed, it is the innocent defendant who, when confronted with forensic evidence that the government claims inculpates him, might seem most inclined to seek a test. But that innocent defendant would be most likely to be dissuaded from such testing in a regime that allows inferences of guilt from failures to follow up. Unaware of how the government’s testing could falsely point in their direction (imagine it turns out from contamination) such a defendant will be least inclined to roll the dice that whatever went wrong for the government would not for them go wrong for them again, and thereby effectively condemn them.

For example, imagine a sixty-year-old retiree and upstanding member of a community, married for thirty-five years and the father of two. His DNA is held in a national database as a result of a conviction for writing bad checks ten years earlier. One day, the police knock on his door and arrest him for a murder that occurred forty years in the past. The only evidence against him is DNA tests that revealed that the retiree’s profile matched one retrieved from pantyhose used to strangle a homicide victim; the DNA sample is not semen or blood, but cells believed to have come from skin, sweat, or saliva. Another swabbing, taken from a blood sample found on the victim’s hand, is determined to match an individual only four years old at the time of the murder and believed to have nothing to do with the case. Analysts provide no explanation for the second match, but the defense learns that the then-four-year-old’s DNA was processed at the lab on the same day as the questioned samples.138

137. Murphy, supra note 3, at 753–56.
Now imagine the retiree is innocent. And that his lawyer does not know much about DNA evidence. Surely the attorney should retain an expert to explain the evidence, and to point out any weaknesses or lines of attack. Indeed, given the unexplained presence of a clearly innocent third party, an attorney would be unethical in failing to seek assistance. But in a jurisdiction that allows appropriation, missing evidence, or concession arguments, the strategic calculation is less clear. The attorney already has at least one line of effective cross concerning the unexplained DNA: the unexplained presence of the four-year-old. And if the DNA is the only evidence against the defendant, then the strength of the defense’s challenge will be the difference between freedom and false conviction. Why put that at risk by seeking advice that might ultimately affirm the government’s conclusion, when those efforts that could then be appropriated by the government in a manner averse to the client’s interest? Of course, in a jurisdiction that allows both missing evidence arguments, the lawyer is cursed if she seeks assistance (since the government can point out that an expert was consulted but never heard from) and cursed if she does not (since then the government can claim that the failure to seek assistance suggests the defendant concedes its futility). Permitting either kind of argument serves to penalize precisely those persons—the innocents who do not know why or how a scientific test identified them as the culprit—most in need of protection.

In sum, it is the duty of the defense to call the government’s evidence into question such that the government’s burden cannot be met. That duty may be difficult to meet absent an affirmative case to bolster the defense position, but the law should not place the additional hurdle of requiring the defense to supply explanations for why—in the course of adducing its arguments to create a reasonable doubt—the defense pursued one line of investigation or another. Although it is of course true that the strongest case may be one in which the defense can offer an explanation for what otherwise seems to be damning evidence, the adversarial system permits acquittal based only on a jury’s belief that the evidence was insufficient, without the further requirement that they understand why the government’s proof was lacking. This reality is the margin between the presumption of innocence and proof beyond a reasonable doubt; conviction in our system explicitly rejects the notion

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139. Indeed, the very ambiguity of the evidentiary consequences of seeking independent testing make the defense attorney’s position untenable. See, e.g., Paul C. Giannelli et al., Defense Tactics for DNA Litigation, Profiles DNA, Jan. 1999, at 10, 10–11 (observing that defense attorneys face “a difficult choice—forgo DNA testing, and risk the conviction of an innocent person, or request such testing and possibly aid the conviction of the lawyer’s own client” (quoting HARLAN LEVY, AND THE BLOOD CRIED OUT: A PROSECUTOR’S SPELLBINDING ACCOUNT OF THE POWER OF DNA 196 (1996))).

140. See Underwood, supra note 118, at 1337–38 (noting that improbable claims will likely make the “factfinder . . . quite properly skeptical”).
that evidence in equipoise falls against the defendant's interest.\footnote{Damaska, supra note 117, at 34; Underwood, supra note 118, at 1306–07. It might additionally be observed that such arguments further threaten to muddle and confuse the jury by demanding a degree of legal sophistication that is unrealistic to expect. Cf. Hayes v. State, 660 So. 2d 257, 265–66 (Fla. 1995) (rejecting argument that government may say defense has no obligation to test but does have “opportunity” to test, because “we are unwilling to assume that the jury could have found a measurable distinction between the terms”).}

Accordingly, permitting arguments of this kind bestows upon an innocent defendant not just the task of refuting the strengths of the government’s evidence, but also the additional burden of explaining how it came to be so compelling in the first place.\footnote{Cf. Underwood, supra note 118, at 1338 (noting that with regard to burden shifting for other kinds of improbable claims, such a rule would lead to double counting of the improbability).}

The high standard and extreme burden of proof in the criminal justice systems—perhaps unreasonably and irrationally so to the lay person’s mind—in fact generate confidence that the guilty label is always properly affixed.\footnote{Of course, second generation sciences like DNA typing have done much to call this assumption into question through the numerous exoneration cases as well. Murphy, supra note 3, at 724.}

Despite the temptation to permit the government extra latitude when the defense fails to call or retain an expert but nonetheless attacks the evidence, the use of defendants’ efforts to investigate against them—while arguably persuasive in a single case—ultimately threatens to nudge the integrity of the entire system into disrepute.

D. Autonomy and Dignity of the Defendant

Lastly, the Fifth and Sixth Amendment protections also aim to vouchsafe the individual autonomy and dignity of the defendant. Of course, this value is embodied most clearly in the Fifth Amendment right to silence, but it also finds expression in the rights to counsel and to put the government to its proof.\footnote{Cf. Underwood, supra note 118, at 1338 (noting that with regard to burden shifting for other kinds of improbable claims, such a rule would lead to double counting of the improbability).}

The methodological robustness of second generation sciences stages a difficult confrontation between the truth seeking function and a defendant’s dignitary interests. Second generation sciences are remarkably seductive in their probity and in their promise of objective truth. A DNA test itself appears irresistibly certain; when the DNA profile is run in a database and a matching suspect turns up, it is almost
as though the pristine hand of science had itself marked the defendant guilty. In the face of such evidence, it is not hard to imagine why judges bristle at a defendant's argument that a DNA test might be faulty, or why the prosecutor instinctively feels compelled to argue that a truly innocent defendant would have tested the evidence and presented a favorable result.

Of course, the seductions of scientific methods of proof are nothing new, nor are their conflicts with human dignitary values. Fingerprints, photographs, and other first generation technologies also dazzled and mesmerized judges, prosecutors, and juries, who all too often succumbed to the temptation to view such "science" as infallible. 145 Second generation technologies, in this respect, are simply all the more alluring: they are methodologically robust, mechanically sophisticated, and proactive in nature. The now familiar doubts about the reliability of first generation techniques, or the dubious simplicity with which they were developed, or the questionable existence of bias in examination, tend to be altogether absent. Rather than an ordinary police officer coming into court to testify that the individual witnesses picked as the perpetrator has shoes that leave prints exactly like the ones left at the scene, a lab analyst takes the stand and describes in highly sophisticated terms the scientific processes that led to the identification of the defendant as a suspect twenty years after the crime occurred.

But of course, mistakes do occur—even with robust technologies like those of the second generation, and thus care should be taken not to bend the rules of evidence to skirt the core values embodied by the Fifth and Sixth Amendments. Second generation sciences, for all their dazzle, are nonetheless subject to the same problems of bias, error, contamination, and inaccuracy as their first generation counterparts, or any form of admissible evidence. 146 Many of them also require a significant amount of subjective decision making; even DNA typing—the archetypal objective science—requires an analyst to make judgment calls separating signal from noise. 147 Just because a discipline is founded in scientific principle does not mean that it always yields wholly

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146. See, e.g., Murphy, supra note 3, at 772–74 (listing scandals).

determinate answers: there is meteorology and there is math.

The commitment to the rigor of the adversary system, and resistance to the beguiling shortcut of trial by science, ensures a payoff larger than simply loyalty to some abstract ideals: it manifestly safeguards the reliability of the evidence presented therein. At the same time, the commitment to the symbolic function of criminal adjudication enshrined in the Fifth and Sixth Amendments should not be too readily discarded. 148

CONCLUSION

In sum, it is evident that a range of cases have already emerged in which the existence of second generation scientific evidence—typically DNA—prompts the government to make moves and arguments that would be impermissible were the evidence different. such cases will likely only increase as the criminal justice system increasingly has at its disposable highly reliable, scientifically sophisticated technologies that extend irresistible invitations to definitively “know the truth.” As courts grapple with appropriation of defense experts, missing witness, and concession of guilt issues, it would behoove them to think of the particular characteristics of second generation forensic evidence. Those characteristics reveal both the shallow seductiveness of permitting such arguments without restraint, as well as the profound disregard of the values enshrined in our evidentiary and constitutional rules that allowing such arguments represents. Although scientific proof has long tempted the criminal justice system, the underlying values animating the Fifth and Sixth Amendment rights threatened by such arguments should ultimately reveal its alluring ease to be a mirage, and the shoring up of the robustness of the adversary system as really the true opportunity for truth.

148. Underwood, supra note 118, at 1307.