

**1984 ARRIVES: THOUGHT(CRIME), TECHNOLOGY,  
AND THE CONSTITUTION**

William Federspiel\*

INTRODUCTION .....	865
I. POLYGRAPHS: AN ANALOG WITH HISTORY .....	870
II. CONSTITUTIONAL IMPLICATIONS OF THOUGHT-READING DEVICES .....	872
A. <i>Fourth Amendment Searches</i> .....	873
1. <i>Katz</i> —The Fourth Amendment Protects People .....	875
2. <i>Kyllo</i> , Thermal Imaging, and Shrinking Spheres of Protection ..	876
B. <i>The Limitations of Katz and Kyllo</i> .....	878
1. Location .....	879
2. General Public Use .....	880
3. Expectation of Privacy .....	881
4. More Reasonableness and the Limits of Fourth Amendment Protections .....	882
C. <i>Fifth Amendment Self-Incrimination</i> .....	883
1. Compulsion .....	884
2. Testimonial Versus Physical .....	885
III. DOES THOUGHT-READING TECHNOLOGY “SEARCH” A DEFENDANT FOR COMPELLED TESTIMONY? .....	889
A. <i>Searching the Mind?</i> .....	889
B. <i>Compelling Testimony?</i> .....	892
IV. A NEW PROPOSAL FOR DEALING WITH THOUGHT-READING TECHNOLOGY UNDER THE FOURTH AND FIFTH AMENDMENTS .....	894
A. <i>Toward a New Set of Standards</i> .....	895
B. <i>Cognition and Its Limitations</i> .....	895
C. <i>Searching for Freedom of Thought with No Incrimination</i> .....	897
D. <i>Beyond Governmental Uses—Final Considerations</i> .....	900

INTRODUCTION

Human society has long been fascinated with the concept of reading people’s minds. For centuries, charlatans have preyed on the gullible with claims of being able to read minds through use of their psychic powers.<sup>1</sup> As technology progressed over

---

\* J.D., William & Mary Law School, 2008; M.P.P., College of William & Mary, 2008. Many thanks to my friends and family, and a special thanks to my wife, Emily.

<sup>1</sup> Rabbi Eli Teitelbaum, *Frauds, Con Artists, Quacks, and Charlatans, Camp S’dei Chemed International*, <http://www.campsci.com/scams/frauds.htm> (last visited Nov. 9, 2007).

the past century, science fiction writers imagined a world with devices that allow humans to read each other's thoughts.<sup>2</sup> The most famous of these works is George Orwell's *1984*, a dystopian tale in which "Thought Police" monitor the population, seeking out dissidents for "Thoughtcrime" against the government.<sup>3</sup> Even non-fiction writers weighed in—at least one Supreme Court Justice speculated about the possibility that technology might one day give the government the "means of exploring unexpressed beliefs, thoughts and emotions."<sup>4</sup>

Sometime in the not-too-distant future, science may finally catch up to science fiction. Recently, scientists around the world have reported breakthroughs in understanding the human brain and how it works.<sup>5</sup> For example, scientists at the University of California, Los Angeles (UCLA) performed an experiment in which the researchers showed a clip of *The Good, the Bad and the Ugly*<sup>6</sup> to participants while a functional magnetic resonance imaging (fMRI) machine scanned their brains.<sup>7</sup> Based on the

---

<sup>2</sup> For example, *Strange Days*, starring Ralph Fiennes and Angela Bassett, envisioned a world where the black market for drugs is secondary to a black market for recordings of people's memories. *STRANGE DAYS* (Lightstorm Entertainment 1995); see also JAMES L. HALPERIN, *THE TRUTH MACHINE* (1996); GEORGE ORWELL, 1984 (New American Library 1981) (1949); *MINORITY REPORT* (Twentieth Century Fox Film Corp. 2002).

<sup>3</sup> ORWELL, *supra* note 2.

<sup>4</sup> *Olmstead v. United States*, 277 U.S. 438, 474 (1928) (Brandeis, J., dissenting). To say that Justice Brandeis was concerned about such developments is an understatement. "That places the liberty of every man in the hands of every petty officer" was said by James Otis of much lesser intrusions than these [psychic means of exploring unexpressed beliefs, thoughts, and emotions]." *Id.* Unfortunately, Justice Brandeis was dissenting in *Olmstead*, and, as this Note will discuss, later Supreme Court doctrinal developments did not completely close the door on potential government use of thought-reading technologies. See *infra* Part II.

<sup>5</sup> See, e.g., Press Release, University of California at Los Angeles, First Evidence Found Of Mirror Neuron's Role in Language (Sept. 20, 2006), <http://newsroom.ucla.edu/portal/ucla/First-Evidence-Found-of-Mirror-7353.aspx?ncid=5368> (detailing recent study findings showing that the same parts of the brain are activated when a person reads a sentence describing a physical object and when that person looks at the same physical object); Tony Fitzpatrick, *Teenager Moves Video Icons Just by Imagination*, Oct. 9, 2006, <http://news-info.wustl.edu/news/page/normal/7800.html> (detailing an experiment in which neurosurgeons, neurologists, and engineers created an interface that read an epileptic child's brain activity, allowing him to control a video game using only his thoughts); Mark Peplow, *Brain Imaging Could Spot Liars*, BIOED ONLINE, Nov. 29, 2004, <http://www.bioedonline.org/news/news.cfm?art=1409> (detailing the use of functional magnetic resonance imaging by researchers to detect areas of the brain activated by lying); "Thoughts Read" Via Brain Scans, BBC NEWS, Aug. 7, 2005, <http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/4715327.stm> [hereinafter *Thoughts Read*] (detailing two studies in which researchers were able to link images a person was viewing to specific electrical patterns in the brain).

<sup>6</sup> *THE GOOD, THE BAD AND THE UGLY* (United Artists 1967).

<sup>7</sup> *Thoughts Read*, *supra* note 5. fMRI technology is a derivative of magnetic resonance imaging (MRI) technology. Comm. on Science & Law, Assoc. of the Bar of the City of New York, *Are Your Thoughts Your Own?: "Neuroprivacy" and the Legal Implications of Brain*

scans, the researchers could “tell one part of a scene from another” and distinguish between various sounds a participant was hearing at a given time.<sup>8</sup> The studies demonstrated that fMRI machines could, in theory, be used to read thoughts, though the researchers cautioned that they are a long way from being able to read people’s minds.<sup>9</sup> Nonetheless, the “study represents an important but very early stage step towards eventually building a machine that can track a person’s consciousness on a second-by-second basis.”<sup>10</sup> “One day, someone will come up with a machine in a baseball cap,” said Dr. John-Dylan Haynes.<sup>11</sup> “Then it really could be helpful in everyday applications.”<sup>12</sup>

That day may come sooner than anyone imagined. Indeed, the pace of innovation in this area is at once impressive and alarming.<sup>13</sup> Less than two years after researchers published the UCLA studies, several other researchers released studies with significant

---

*Imaging*, 60 RECORD 407, 410–11 (2005) [hereinafter *Are Your Thoughts Your Own?*]. Both technologies use magnetic fields and radio waves to produce pictures of the brain. *Id.* at 410. The difference is that traditional MRI technology creates a static image of the brain, while fMRI can be used to take pictures in rapid succession, essentially allowing scientists to create movies of the brain as it performs different tasks. *Id.* There are a number of other potential technologies that could ultimately serve to read people’s thoughts. *See id.* at 410–11; *see also* Charles N.W. Keckler, *Cross-Examining the Brain: A Legal Analysis of Neural Imaging for Credibility Impeachment*, 57 HASTINGS L.J. 509, 515–37 (2006) (discussing various technologies in this field). Electroencephalography (EEG), for example, is used as part of a technique called “brain fingerprinting.” *Are Your Thoughts Your Own?*, *supra*, at 411, 414–16; Keckler, *supra*, at 519–25; Andre A. Moenssens, *Brain Fingerprinting—Can It Be Used to Detect the Innocence of Persons Charged with a Crime?*, 70 UMKC L. REV. 891, 896 (2002). “Brain fingerprinting” measures brainwaves to determine whether individuals have certain information stored in their brains. Moenssens, *supra*, at 893–99. Proponents of brain fingerprinting qualify the technique’s utility, asserting that while it cannot “establish guilt or innocence,” it can determine whether a subject has certain relevant knowledge stored in her brain. *Id.* at 902. This technology has already been offered in some cases. *Are Your Thoughts Your Own?*, *supra*, at 414 (discussing a convicted murderer who submitted brain fingerprinting as evidence during his appeal).

<sup>8</sup> *Thoughts Read*, *supra* note 5 (quoting Professor Itzhak Fried).

<sup>9</sup> *Id.*

<sup>10</sup> *Id.* (quoting Dr. John-Dylan Haynes).

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

<sup>13</sup> *See, e.g.*, Tom Heneghan, *Call for “Neuroethics” as Brain Science Races Ahead*, REUTERS, Feb. 12, 2007, [http://www.reuters.com/article/scienceNews/idUSL1440532120070215?src=021507\\_0839\\_ARTICLE\\_PROMO\\_also\\_on\\_reuters](http://www.reuters.com/article/scienceNews/idUSL1440532120070215?src=021507_0839_ARTICLE_PROMO_also_on_reuters); *see also* Ronald Bailey, *A Truth Machine*, REASON ONLINE, Nov. 14, 2001, <http://www.reason.com/news/show/34911.html> (discussing the speed of innovations in thought-reading technology); Emily Singer, *Building the Cortex in Silicon*, TECH. REV., Feb. 12, 2007, [http://www.technologyreview.com/read\\_article.aspx?id=18164&ch=infotech](http://www.technologyreview.com/read_article.aspx?id=18164&ch=infotech) (discussing attempts to build a functional computer model of the brain that would allow scientists to study thought patterns in an experimental setting).

ramifications for the development of thought-reading technology.<sup>14</sup> The most important of these innovations came from an international group of scientists who claimed to be able to read minds using fMRI.<sup>15</sup> The researchers said they could read people's intentions with a seventy percent accuracy rate using a program developed to read fMRI scans looking for patterns of activity.<sup>16</sup> This research might lead to technology capable of reading abstract thoughts.<sup>17</sup> Further, such research may make it possible to send email or perform other routine tasks simply by thinking.<sup>18</sup> "[W]hat you can be absolutely sure of is that these [studies] will continue to roll out," said Professor Colin Blakemore.<sup>19</sup> "[W]e will have more and more ability to probe people's intentions, minds, background thoughts, hopes and emotions."<sup>20</sup>

Other scientists are pressing ahead in the search for everyday applications of thought-reading technology. For example, some researchers are attempting to ascertain people's unconscious racial attitudes using existing technologies.<sup>21</sup> Others are engaging in "neuromarketing," which uses MRI technology to detect consumers' unconscious preferences for different products.<sup>22</sup> Although the underlying theory of neuromarketing is now controversial,<sup>23</sup> it may become less so over time as thought-reading technology improves.

As the development of thought-reading technologies races along, society must face the serious ramifications this revolutionary science presents, and it should do

---

<sup>14</sup> See, e.g., "Altruistic" Brain Region Found, BBC NEWS, Jan. 22, 2007, <http://news.bbc.co.uk/2/hi/health/6278907.stm> (discussing a recent study that claims to have discovered the area of the brain responsible for altruistic behavior in humans); *Brain Scan "Can Read Your Mind,"* BBC NEWS, Feb. 9, 2007, <http://news.bbc.co.uk/1/hi/health/6346069.stm> [hereinafter *Scan "Can Read"*]; Candace Lombardi, *The Next Game Controller—Your Brain?*, CNET NEWS, Mar. 8, 2007, [http://www.news.com/the-next-game-controller-your-brain/2100-1043\\_3-6165143.html?tag=item](http://www.news.com/the-next-game-controller-your-brain/2100-1043_3-6165143.html?tag=item) (discussing the planned use of a helmet as a "brain/computer interface" to be released to the market by 2008); *Science Tracks How the Brain's "Clock" Ticks*, FORBES, Feb. 2, 2007, <http://www.forbes.com/health/feeds/hscout/2007/02/02/hscout601436.html> (discussing development of a new model of how the human brain tracks the passage of time); Tom Simonite, *Neural "Extension Cord" Developed for Brain Implants*, NEWS SCIENTIST, Jan. 19, 2007, <http://www.newscientist.com/channel/tech/dn10997> (discussing development of a "data cable" of nerves that could one day be used to connect computers to the human nervous system).

<sup>15</sup> *Scan "Can Read,"* *supra* note 14.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*

<sup>21</sup> *Are Your Thoughts Your Own?*, *supra* note 7, at 412–13.

<sup>22</sup> *Id.* at 413.

<sup>23</sup> *Id.* at 413–14; see also Heneghan, *supra* note 13 (discussing the possibility of practical applications of neuromarketing in five to ten years and the likelihood that such applications would be unethical).

so sooner, rather than later. “The potential for misuse of this technology is profound,” said Judy Illes, director of the Stanford University neuroethics program in California.<sup>24</sup> “This is a truly urgent situation.”<sup>25</sup> Already scientists can read simple intentions and get “yes” or “no” responses—“simple things that are quite useful for applications.”<sup>26</sup> As another scientist explained, “[p]eople want to know if, when they go to an airport, their luggage will go through one scanner and their brains will go through another. Do I think that’s around the corner? I do.”<sup>27</sup> Scientists already realize that the potential for misuse of thought-reading technology mirrors the situations presented by science fiction.<sup>28</sup> It also creates frightening opportunities for real-life dictators. As one fMRI proponent put it, “If I were the next Joe Stalin, I could use this technology to figure out who my friends and enemies are very simply, so I’d know who to shoot.”<sup>29</sup> As such, scientists are pushing for discussions of “how we want to use this technology and who should have access to it” now.<sup>30</sup>

Assuming that this technology will continue to develop rapidly, it will clearly pose challenges for our legal system as well as basic ethics. The possibility of actual thought-reading devices presents fascinating challenges for our constitutional system. Such technology has endless applications in a law enforcement setting. Thought-reading devices could help solve cold cases and help police eliminate potential suspects quickly and reliably. And, of course, such devices would greatly facilitate efforts to root out terrorists before they can harm civilians. Beyond the law enforcement arena, thought-reading technology could affect civil suits as well. What tort plaintiff would not want to be able to introduce evidence of precisely what the tortfeasor was thinking when she committed the alleged tort? Regardless of the setting, every potential use of thought-reading devices in the legal context raises grave constitutional concerns.

This Note focuses on the constitutional implications of the potential use of thought-reading devices in the law enforcement setting.<sup>31</sup> Part I begins with a brief review of the most analogous technology that courts have dealt with to date: polygraph machines. Part II then reviews the Supreme Court’s jurisprudence on Fourth Amendment searches and Fifth Amendment protection against self-incrimination. Part III tests the boundaries of these doctrines by applying them to thought-reading technologies.

---

<sup>24</sup> Heneghan, *supra* note 13 (quoting Dr. John-Dylan Haynes).

<sup>25</sup> *Id.*

<sup>26</sup> *Id.*

<sup>27</sup> *Id.* (quoting Martha Farah, director of the University of Pennsylvania’s Center for Cognitive Neuroscience).

<sup>28</sup> *See id.* (noting the potential for misuse as presented in *Minority Report*).

<sup>29</sup> Jeff Wise, *This is Your Brain . . .*, POPULAR MECHANICS, Nov. 2007, at 68.

<sup>30</sup> Heneghan, *supra* note 13 (quoting Martha Farah).

<sup>31</sup> This Note focuses on a criminal setting, but there are a number of other potential settings in which the constitutionality of such technology could be challenged. For example, corporations could use this technology to investigate violations of company policy and terminate employees based on the results. Any federal or state law that would allow such a use of this technology could be challenged as allowing unconstitutional violations of privacy.

Finally, in Part IV, this Note looks at principles underlying the Bill of Rights to propose a new standard for Fourth and Fifth Amendment issues involving thought-reading technologies, thereby addressing the limitations of current doctrines.

### I. POLYGRAPHS: AN ANALOG WITH HISTORY

To date, the technology most similar to thought-reading devices that the courts have dealt with extensively is the polygraph machine.<sup>32</sup> Polygraph technology has experienced a rocky relationship with the U.S. court system.<sup>33</sup> Beginning with a crude predecessor to the polygraph machine in *Frye v. United States*, courts experienced difficulty in determining how exactly to deal with questions about polygraphs.<sup>34</sup> In *Frye*, the D.C. Court of Appeals rejected the admissibility of evidence from systolic blood pressure deception tests on the basis that the tests had not gained “general acceptance” in the scientific field.<sup>35</sup> Although the court in *Frye* acknowledged the difficulty in discerning what constitutes general acceptance, the court nonetheless adopted the following standard:

Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.<sup>36</sup>

---

<sup>32</sup> Catherine M. Polizzi, *A New View into the Truth: Impact of a Reliable Deception Detection Technology on the Legal System*, 21 RUTGERS COMPUTER & TECH. L.J. 395, 398 & n.9 (1995).

<sup>33</sup> *See id.* at 404–05 (“In terms of admissibility, deception detection technology has not fared well. The reliability of the polygraph has been hotly debated, and reports of polygraph accuracy vary widely. Indeed, its theoretical underpinnings (i.e., that lying is accompanied by detectable physical manifestations) have been summarily dismissed by some commentators.” (footnotes omitted)); Timothy B. Henseler, Comment, *A Critical Look at the Admissibility of Polygraph Evidence in the Wake of Daubert: The Lie Detector Fails the Test*, 46 CATH. U. L. REV. 1247, 1247 (1997) (“The polygraph and other deception detection instruments have suffered through a tumultuous seventy years in the American legal system.”). Notably, polygraph hypotheticals have troubled commentators as well. *See* Ronald J. Allen & M. Kristin Mace, *The Self-Incrimination Clause Explained and Its Future Predicted*, 94 J. CRIM. L. & CRIMINOLOGY 243, 249–50 (2004) (noting that analysis of a hypothetical involving someone subjected to a lie detector who never says anything but is convicted based on his physiological responses to specific questions “has bedeviled analysis of the Fifth Amendment”).

<sup>34</sup> 293 F. 1013 (D.C. Cir. 1923).

<sup>35</sup> *Id.* at 1014.

<sup>36</sup> *Id.*

Using *Frye*, courts routinely excluded polygraph evidence, with many imposing per se bans on the introduction of such test results.<sup>37</sup>

In *Daubert v. Merrell Dow Pharmaceuticals*, the Supreme Court held that the Federal Rules of Evidence displaced *Frye*'s general acceptance test.<sup>38</sup> After *Daubert*, the questions used to determine polygraph admissibility became the same as those for any other type of scientific evidence: "whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue."<sup>39</sup> The Court went on to note that the initial determination of admissibility for any scientific evidence depends on its scientific validity and, therefore, its reliability.<sup>40</sup> The *Daubert* decision spawned speculation that polygraph evidence would become admissible under the Federal Rules of Evidence, and indeed some courts revised their per se rules against polygraph admissibility in response to the decision.<sup>41</sup>

However, in *United States v. Scheffer*, the Court allowed a per se ban on polygraph evidence in the Military Rules of Evidence to remain in place.<sup>42</sup> Focusing, in part, on controversy regarding the reliability of polygraphs, the Court concluded that a per se ban did not violate a defendant's Sixth Amendment right to present a defense.<sup>43</sup> *Scheffer* represents a continuation of the longer trend against the admissibility of polygraph evidence.<sup>44</sup>

Polygraphs, however, have not presented courts with the same kind of constitutional questions as newer technologies. By focusing on the reliability of polygraphs,

---

<sup>37</sup> See Polizzi, *supra* note 32, at 405; Henseler, *supra* note 33, at 1259–61. New Mexico is the only state to fully allow the admissibility of polygraph evidence. Henseler, *supra* note 33, at 1262–66.

<sup>38</sup> 509 U.S. 579 (1993).

<sup>39</sup> *Daubert*, 509 U.S. at 592. Though these questions guide admissibility of polygraph evidence, it should be noted that defendants may have a right to offer polygraph results in support of their case. See generally Robin D. Barovick, Comment, *Between Rock and a Hard Place: Polygraph Prejudice Persists After Scheffer*, 47 BUFF. L. REV. 1533, 1542–45 (1999) (noting that polygraph prejudice circumscribes a defendant's constitutional right to present a defense); Doran D. Peters, Comment, *Per Se Prohibitions of the Admission of Polygraph Evidence as Upheld in Scheffer Are Both Violative of the Constitution and the Federal Rules of Evidence as Applied by Daubert*, 27 AM. J. CRIM. L. 249, 275–78 (2000) (arguing that per se rules against polygraph evidence affect the constitutional rights of defendants). Polygraphs, like thought-reading technology, implicate the Fourth and Fifth Amendments for similar reasons discussed in Parts III and IV. See, e.g., *Schmerber v. California*, 384 U.S. 757, 763–64 (1966) (noting that lie detector technology may seemingly be geared to physical evidence but really violates Fifth Amendment protections).

<sup>40</sup> *Daubert*, 509 U.S. at 590 ("In short, the requirement [in the Federal Rules of Evidence] that an expert's testimony pertain to 'scientific knowledge' establishes a standard of evidentiary reliability.").

<sup>41</sup> See Henseler, *supra* note 33, at 1249–50.

<sup>42</sup> 523 U.S. 303, 309 (1998).

<sup>43</sup> See *id.*

<sup>44</sup> Barovick, *supra* note 39, at 1542–43.

the Court has ducked more fundamental questions regarding technologies that purport to measure one's truthfulness by measuring physiological changes.<sup>45</sup> By considering the impending development of thought-reading machines, these constitutional questions come into sharper relief.<sup>46</sup> The rest of this Note focuses on the constitutional problems inherent in the use of thought-reading technology, but ultimately these problems exist in varying degrees for all forms of truth-detection technology that monitor physiology.

## II. CONSTITUTIONAL IMPLICATIONS OF THOUGHT-READING DEVICES

The use of thought-reading devices by the government potentially violates a number of constitutional rights. First Amendment protections regarding freedom of

---

<sup>45</sup> At least one commentator has argued that the focus on the reliability of polygraphs is misdirected, instead calling for a relative measure of the reliability of polygraphs against other forms of evidence, such as eyewitness testimony, which is notoriously unreliable. *See* Jeffrey Philip Ouellet, Note, *Posado and the Polygraph: The Truth Behind Post-Daubert Deception Detection*, 54 WASH. & LEE L. REV. 769, 802 (1997) ("Focusing on the strengths and weaknesses of polygraph evidence in the abstract is misleading. . . . Therefore, the appropriate inquiry is not whether polygraph evidence is reliable given its error rate, but rather whether the evidence is reliable when compared with other types of evidence that courts routinely admit."). More importantly, the focus on reliability in polygraph decisions avoids the Fourth and Fifth Amendment questions discussed below that are more fundamental. These questions have only been discussed, rather unsatisfyingly, by the Court in dicta. *See* *Schmerber v. California*, 384 U.S. 757, 764 (1966).

<sup>46</sup> Some commentators have considered these issues in the context of enhanced variations on lie detectors. *See, e.g.*, George M. Dery, *Lying Eyes: Constitutional Implications of New Thermal Imaging Lie Detection Technology*, 31 AM. J. CRIM. L. 217 (2004) (discussing the potential use of thermal imaging lie detector technology); Keckler, *supra* note 7, at 537–53 (discussing the potential development and use of a deception detection device in a courtroom setting and proposing a model for using such a device in such a way that would satisfy the Federal Rules of Evidence); Polizzi, *supra* note 32 (discussing the courtroom uses of reliable deception detection technology); *see also* Moenssens, *supra* note 7 (discussing how brain fingerprinting could fit into current legal paradigms for admitting evidence); Michael S. Pardo, *Disentangling the Fourth Amendment and the Self-Incrimination Clause*, 90 IOWA L. REV. 1857, 1863 (2005) (discussing the possibility that the government could strap a thought-reading lie detector to a suspect without violating the Fifth Amendment's Self-Incrimination Clause using a reliability analysis because the defendant would not face any choice with regard to revealing any information). With some exceptions, however, commentators have focused on *Daubert* reliability issues rather than looking at the more fundamental constitutional problems that such technologies may create. *Cf.* Sean Kevin Thompson, Note, *The Legality of the Use of Psychiatric Neuroimaging in Intelligence Interrogation*, 90 CORNELL L. REV. 1601 (2005) (discussing the use of fMRI technology in the interrogation of foreign detainees to detect deception and potentially other cognitive information).

speech<sup>47</sup> are clearly implicated; freedom of thought is, after all, a necessary prerequisite to the exercise of free speech.<sup>48</sup> The constitutional right to privacy,<sup>49</sup> even in its most narrow conception, is at stake when it is possible to monitor people's innermost thoughts. Focusing on the criminal law arena narrows the field of inquiry significantly. The remainder of this Note will focus on questions regarding the Fourth Amendment's prohibition against unreasonable searches and the Fifth Amendment's protections against self-incrimination.<sup>50</sup>

#### A. Fourth Amendment Searches

When considering whether the Fourth Amendment<sup>51</sup> would apply to thought-reading devices, the first question to consider is whether the use of such technology constitutes a "search."<sup>52</sup> The second question is whether that search is "reasonable."<sup>53</sup> Surprisingly, this second prong is, in some ways, the easier of the two prongs to understand under current doctrine. The default position under the Fourth Amendment is that a search is reasonable if executed "pursuant to a warrant supported by probable cause."<sup>54</sup> This default position is, of course, subject to several exceptions.<sup>55</sup> Thus,

---

<sup>47</sup> U.S. CONST. amend. I. ("Congress shall make no law . . . abridging the freedom of speech, or of the press . . .").

<sup>48</sup> See *infra* Part IV.C. for a discussion of the links between freedom of speech and freedom of thought.

<sup>49</sup> See, e.g., *Griswold v. Connecticut*, 381 U.S. 479 (1965) (recognizing a right to privacy under the Constitution).

<sup>50</sup> For an enlightening discussion of the problems in modern Fourth and Fifth Amendment jurisprudence and scholarship, see Pardo, *supra* note 46, at 1859–60 (discussing the theoretical overlap of the two amendments and the problems that have resulted from the Court's modern interpretation of the amendments as totally separate spheres).

<sup>51</sup> U.S. CONST. amend. IV.

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

*Id.*

<sup>52</sup> See Pardo, *supra* note 46, at 1867.

<sup>53</sup> *Id.* at 1867–68.

<sup>54</sup> *Id.* at 1868.

<sup>55</sup> *Id.* (noting the following exceptions to the default rule that searches are reasonable if conducted pursuant to a warrant supported by probable cause: "warrants are unnecessary when there are exigent circumstances, automobiles involved, suspects arrested outside their home, or searches conducted incident to arrests," when there is reasonable suspicion "that a crime has occurred or is about to occur," and when there are governmental "special needs" involved (footnotes omitted)).

although there may be question as to whether probable cause exists in a given situation, the question of whether a search is reasonable is relatively straightforward.<sup>56</sup>

Determining whether or not a search occurs, however, is not as straightforward under the Court's search jurisprudence.<sup>57</sup> Some evidence indicates that the Framers enacted the Fourth Amendment believing it only covered searches of homes—not commercial establishments or people in public.<sup>58</sup> Consequently, up until the 1960s, the Court's jurisprudence on Fourth Amendment searches focused “solely on property interests” to determine whether a search occurred.<sup>59</sup> That standard changed when the Court decided *Katz v. United States* in 1967.<sup>60</sup>

---

<sup>56</sup> That said, there are two important caveats to note. First, because the Fourth Amendment only protects against “unreasonable searches and seizures,” U.S. CONST. amend. IV, determining whether reading someone's thoughts is ever “reasonable” is important. For reasons discussed *infra* in Parts II.B.2 and II.B.4, it is entirely plausible that society's shifting conception of reasonableness could encompass thought-reading technology. In that case, police could execute searches of people's thoughts pursuant to warrants. Further, it is important to note that, at the very least, the exception allowing for warrantless searches when there is reasonable suspicion that a crime has occurred or is about to occur clearly implicates the possible use of thought-reading technology. If police suspected someone of being involved in a crime (past or future), they could conceivably conduct a thought-scan without a warrant if such suspicions are “reasonable.” Again, if the use of thought-reading technology is reasonable, such warrantless searches could be permissible. As such, the Fourth Amendment may provide only limited protections if thought-reading technology comes to be viewed as a search for Fourth Amendment purposes.

<sup>57</sup> *Kyllo v. United States*, 533 U.S. 27, 31 (2001) (“On the other hand, the antecedent question whether or not a Fourth Amendment ‘search’ has occurred is not so simple under our precedent.”).

<sup>58</sup> See David E. Steinberg, *The Original Understanding of Unreasonable Searches and Seizures*, 56 FLA. L. REV. 1051, 1061 (2004). Steinberg's takeaway from the Court's convoluted Fourth Amendment jurisprudence is that the Court should return to an originalist, strictly-limited understanding of the Amendment as preventing only unlawful physical searches of homes with only a general warrant or no warrant. *Id.* at 1096. In light of the increasing challenges to basic freedoms from technological advances, rolling back the protections offered by modern Fourth Amendment jurisprudence seems ill-advised.

<sup>59</sup> Ric Simmons, *From Katz to Kyllo: A Blueprint for Adapting the Fourth Amendment to Twenty-First Century Technologies*, 53 HASTINGS L.J. 1303, 1303 (2002). See also, Steinberg, *supra* note 58, at 1053 (discussing the Court's treatment of the Fourth Amendment and its discongruence with the Framers' intent for the scope of Fourth Amendment protection).

<sup>60</sup> 389 U.S. 347 (1967) (holding the government's electronic surveillance of petitioner unconstitutional); see also Andrew Riggs Dunlap, Note, *Fixing the Fourth Amendment with Trade Secret Law: A Response to Kyllo v. United States*, 90 GEO. L.J. 2175, 2176 (2002) (noting that *Katz* represented a change from location-based protections); David A. Sullivan, Note, *A Bright Line in the Sky? Toward a New Fourth Amendment Search Standard for Advancing Surveillance Technology*, 44 ARIZ. L. REV. 967 (2002) (analyzing the *Katz* test). *Katz* represents an especially appropriate starting point for considering the potential implications of thought-reading devices because it too involved the use of sensory-enhancing technology by law enforcement.

### 1. *Katz*—The Fourth Amendment Protects People

*Katz* involved the use of an electronic listening and recording device that agents from the Federal Bureau of Investigation (FBI) attached to a public phone booth.<sup>61</sup> Without a warrant, the agents used the device to overhear and record *Katz*'s conversations, during which he made bets "by telephone from Los Angeles to Miami and Boston, in violation of a federal statute."<sup>62</sup> The trial court allowed the prosecution to offer evidence of these conversations at trial, and the Ninth Circuit affirmed.<sup>63</sup> In affirming *Katz*'s conviction, the Ninth Circuit emphasized that the FBI agents did not physically enter the telephone booth where the petitioner made his calls.<sup>64</sup> Before the Supreme Court, the parties focused on traditional spatial Fourth Amendment analysis, arguing whether a phone booth was a "constitutionally protected area."<sup>65</sup> The *Katz* Court, however, found this formulation of the issues "misleading"<sup>66</sup> and decided to use a different analysis.<sup>67</sup> According to the Court, "the Fourth Amendment protects people, not places."<sup>68</sup>

With this new formulation, the *Katz* Court changed and expanded the focus of the Fourth Amendment's protections against unreasonable searches beyond the home.<sup>69</sup> The true scope of the Fourth Amendment no longer "turn[ed] upon the presence or absence of a physical intrusion into any given enclosure."<sup>70</sup> The Court concluded that the FBI agents conducted a search of *Katz* for purposes of the Fourth Amendment.<sup>71</sup> Justice Harlan's concurrence in *Katz* produced the test for determining whether a search occurs.<sup>72</sup> According to Justice Harlan, "there is a twofold requirement" for

---

<sup>61</sup> *Katz*, 389 U.S. at 348.

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> *Id.* at 348–49.

<sup>65</sup> *Id.* at 349–52.

<sup>66</sup> *Id.* at 351 ("Because of the misleading way the issues have been formulated, the parties have attached great significance to the characterization of the telephone booth from which the petitioner placed his calls.").

<sup>67</sup> *Id.* at 350–51 (declining to adopt the parties' characterization of the issues in the case, which revolved around whether a phone booth was a constitutionally protected place).

<sup>68</sup> *Id.* at 351. *But see infra* section II.B.1 (discussing why *Katz* did not fully abandon the importance of location in Fourth Amendment analysis).

<sup>69</sup> *Katz*, 389 U.S. at 351–52.

<sup>70</sup> *Id.* at 353.

<sup>71</sup> *Id.* ("The Government's activities in electronically listening to and recording the petitioner's words violated the privacy upon which he justifiably relied while using the telephone booth and thus constituted a 'search and seizure' within the meaning of the Fourth Amendment.").

<sup>72</sup> Richard H. Seamon, *Kyllo v. United States and the Partial Ascendance of Justice Scalia's Fourth Amendment*, 79 WASH. U. L.Q. 1013, 1021 (2001); Steinberg, *supra* note 58, at 1054.

a government action to constitute a search: “first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as ‘reasonable.’”<sup>73</sup> This two-part test now forms the cornerstone of the Court’s Fourth Amendment search jurisprudence.<sup>74</sup>

As the Court developed its Fourth Amendment search doctrine, it became clear that the first prong of the test is virtually meaningless.<sup>75</sup> As a result, the true test, following *Katz*, is whether society considers a given expectation of privacy reasonable.<sup>76</sup> Of course, what society considers reasonable changes over time.<sup>77</sup> As the Court noted, technology can drive these changes and has the potential to shrink the sphere of privacy protected by the Fourth Amendment.<sup>78</sup>

## 2. *Kyllo*, Thermal Imaging, and Shrinking Spheres of Protection

In *Kyllo v. United States*, the Supreme Court considered thermal imaging technology<sup>79</sup>—a potentially analogous technology to some of the technologies under development for thought-reading. The Court reviewed the warrantless use of thermal imaging devices to detect relative levels of heat in a home.<sup>80</sup> Agents from the U.S. Department of the Interior used a thermal imager to scan for heat levels in the defendant’s house to determine whether the defendant was using high-intensity lamps typically associated with growing marijuana.<sup>81</sup> The agents used the results of the

---

<sup>73</sup> *Katz*, 389 U.S. at 361 (Harlan, J., concurring). Because of the way Harlan formulated his view of the Fourth Amendment, he limited his holding in *Katz*:

I join the opinion of the Court, which I read to hold only (a) that an enclosed telephone booth is an area where, like a home, and unlike a field, a person has a constitutionally protected reasonable expectation of privacy; (b) that electronic as well as physical intrusion into a place that is in this sense private may constitute a violation of the Fourth Amendment; and (c) that the invasion of a constitutionally protected area by federal authorities is, as the Court has long held, presumptively unreasonable in the absence of a search warrant.

*Id.* at 360–61 (citations omitted).

<sup>74</sup> Steinberg, *supra* note 58, at 1054; *cf.* *Kyllo v. United States*, 533 U.S. 27, 32–33 (2001) (noting that the Supreme Court applied Justice Harlan’s *Katz* test “somewhat in reverse”).

<sup>75</sup> See Ric Simmons, *Technology-Enhanced Surveillance by Law Enforcement Officials*, 60 N.Y.U. ANN. SURV. AM. L. 711, 714 n.6 (2005) [hereinafter Simmons, *Technology-Enhanced Surveillance*].

<sup>76</sup> Simmons, *supra* note 59, at 1313.

<sup>77</sup> See *Kyllo*, 533 U.S. at 33–34.

<sup>78</sup> *Id.*; *cf.* *Olmstead v. United States*, 277 U.S. 438, 472–74 (1928) (Brandeis, J., dissenting) (arguing that technological advances can challenge constitutional protections of individual rights unless the Court adapts its jurisprudence to those advances).

<sup>79</sup> *Kyllo*, 533 U.S. at 29–30.

<sup>80</sup> *Id.*

<sup>81</sup> *Id.*

thermal imaging in conjunction with tips from informants and utility bills to obtain a warrant.<sup>82</sup> When the agents exercised the warrant, they discovered a large indoor marijuana growing operation; this evidence helped procure a successful prosecution of the defendant.<sup>83</sup>

The Ninth Circuit affirmed Kylo's conviction, holding the warrant used to search the defendant's home valid because the homeowner had not shown a "subjective expectation of privacy" by trying to prevent the heat from escaping his home.<sup>84</sup> The Court also ruled that there was "no objectively reasonable expectation of privacy" because the thermal imager "did not expose any intimate details of Kylo's life."<sup>85</sup> Justice Scalia, writing for the majority, disagreed with the Ninth Circuit's reasoning and holding.<sup>86</sup> While taking a not-so-subtle dig at *Katz*,<sup>87</sup> the Court nonetheless held that there was an existing standard by which to determine whether there was a reasonable expectation of privacy in this case—namely the common law protection of the interior of homes.<sup>88</sup> In other words, at least to some degree, *Kyllo* represents a return to the location-based jurisprudence of the pre-*Katz* era.<sup>89</sup>

The Court's partial return to location-based Fourth Amendment search protections in *Kyllo* muddled the Court's jurisprudence. However, the Court went one step further in confusing Fourth Amendment search analysis with potentially important implications for thinking about thought-reading technology. In holding that the use of the thermal imager on Kylo's home was a search, Justice Scalia's opinion qualified the holding by leaving open the possibility that the result of the case could change with public use of the technology in question.<sup>90</sup> "We think that obtaining by sense-enhancing technology any information regarding the interior of the home that could not otherwise have been obtained without physical 'intrusion into a constitutionally

---

<sup>82</sup> *Id.* at 30.

<sup>83</sup> *Id.*

<sup>84</sup> *Id.* at 31.

<sup>85</sup> *Id.* (quoting the Ninth Circuit's opinion, 190 F.3d 1041, 1047 (1999)).

<sup>86</sup> *Id.* at 34–35, 38.

<sup>87</sup> *Id.* at 34 (discussing criticism of the *Katz* test as "circular, and hence subjective and unpredictable" in some contexts (citations omitted)).

<sup>88</sup> *Id.*

<sup>89</sup> *See id.* at 31 (emphasizing the importance of protecting the home under the Fourth Amendment: "'At the very core' of the Fourth Amendment 'stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion.'" (quoting *Silverman v. United States*, 365 U.S. 505, 511 (1961))); *see also* Dunlap, *supra* note 60, at 2176, 2187 (calling *Kyllo* a "Pyrrhic victory" for privacy protection because of the Court's return to location-based Fourth Amendment protections). *But see* Seamon, *supra* note 72, at 1015 (arguing that *Kyllo* was only a partial victory for Justice Scalia and that it was not a repudiation of *Katz*); Simmons, *supra* note 59, at 1314 (noting the Court's continued reliance on location in post-*Katz* cases to show that *Katz* did not entirely supplant the "place-based" Fourth Amendment analysis that preceded it).

<sup>90</sup> *Kyllo*, 533 U.S. at 34–35.

protected area,' constitutes a search—at least where (as here) the technology in question is *not in general public use*.”<sup>91</sup> To some degree, Justice Scalia’s “general public use” qualification represented a melding of the *Katz* reasonableness test into his own location-based jurisprudence.<sup>92</sup> Thus, even while Justice Scalia purported to answer the question of “what limits there are upon this power of technology to shrink the realm of guaranteed privacy,”<sup>93</sup> his opinion opened the door for continued erosion of Fourth Amendment protections.<sup>94</sup>

The Court was clearly concerned, in both *Katz* and *Kyllo*, with the ability of technology to reduce the protections offered by the Fourth Amendment.<sup>95</sup> However, the holdings of those cases ultimately leave the door open for technology to overrun the protections of the Fourth Amendment.

### B. *The Limitations of Katz and Kyllo*

Although *Katz* and *Kyllo* represent an evolution of Fourth Amendment doctrine to reflect changing technology, they are nonetheless halting steps with significant limitations. First, these decisions and their progeny retained a focus on the location of the government activity in question.<sup>96</sup> Second, *Kyllo* conditioned the term “search” on whether a given technology is in “general public use.”<sup>97</sup> Third, *Katz* required

---

<sup>91</sup> *Id.* (emphasis added) (citation omitted).

<sup>92</sup> Seamon, *supra* note 72, at 1025 (noting that *Kyllo* represents a “leavening” of Scalia’s location-based approach with the *Katz* test).

<sup>93</sup> *Kyllo*, 533 U.S. at 34.

<sup>94</sup> See Adam W. Brill, Case Note, *Kyllo v. United States: Is the Court’s Bright-Line Rule on Thermal Imaging Written in Disappearing Ink?*, 56 ARK. L. REV. 431, 454 (2003) (arguing that *Kyllo*’s bright-line rule is undermined by the Court’s use of “open terms” and that the decision might not provide protections in the future); Sarilyn E. Hardee, Note, *Why the United States Supreme Court’s Ruling in Kyllo v. United States Is Not the Final Word on the Constitutionality of Thermal Imaging*, 24 CAMPBELL L. REV. 53, 68–70 (2001) (arguing that *Kyllo*’s bright-line rule is “more fuzzy than bright” and that there are “gaping holes” in the decision which could ultimately reduce protections under the Fourth Amendment); Reginald Short, Comment, *The Kyllo Conundrum: A New Standard to Address Technology that Represents a Step Backward for Fourth Amendment Protections*, 80 DENV. U. L. REV. 463, 481 (2002) (arguing that *Kyllo* represents “a step backward for privacy protection” because it is “ill-equipped to handle the challenges of an increasingly mobile and transitory society”).

<sup>95</sup> See *Kyllo*, 533 U.S. at 34 (noting the potential of technology to shrink the Fourth Amendment protections and proposing to limit the degree that the Court would allow that to happen); *Katz v. United States*, 389 U.S. 347, 352–53 (1967) (noting the importance of the telephone in modern life and the need to interpret the Constitution in a way to afford protections to the new technology).

<sup>96</sup> See Simmons, *supra* note 59, at 1314 (noting that the Court emphasized the role of real and personal property concepts in its opinions post *Katz*, and that *Katz* did not entirely supplant the preceding “place-based” Fourth Amendment analysis).

<sup>97</sup> *Kyllo*, 533 U.S. at 34; see also Quin M. Sorenson, Comment, *Losing a Plain View of*

there be a reasonable expectation of privacy in the information being sought.<sup>98</sup> Tied up in both the general public use problem and the reasonable expectation problem is whether either *Katz* or *Kyllo* offers any Fourth Amendment protection when invasive technologies become pervasive.<sup>99</sup> Finally, because the Fourth Amendment only precludes “unreasonable searches,”<sup>100</sup> *Katz*, *Kyllo*, and the Fourth Amendment generally provide only limited protections from potential use and abuse of thought-reading technology.

### 1. Location

As the Court demonstrated in *Kyllo*, it has not completely abandoned its focus on location in its Fourth Amendment jurisprudence.<sup>101</sup> The Court’s focus on the historical importance of the home in Fourth Amendment cases shows this clearly.<sup>102</sup> “We have said that the Fourth Amendment draws ‘a firm line at the entrance to the house.’ That line, we think, must be not only firm but also bright—which requires clear specification of those methods of surveillance that require a warrant.”<sup>103</sup> Tellingly, Justice Scalia, writing for the majority, buttressed his argument that the thermal imaging at issue violated the Fourth Amendment by referring back to pre-*Katz* precedent dealing with “intrusion into a constitutionally protected area.”<sup>104</sup> Thus, *Kyllo* is, at least to some degree, a return to the greater focus on location and property that dominated before *Katz*.<sup>105</sup>

However, *Katz* itself did not entirely abandon the use of location in determining Fourth Amendment protections.<sup>106</sup> Implicit in *Katz*’s reasonable expectation test is,

---

*Katz: The Loss of a Reasonable Expectation of Privacy Under the Readily Available Standard*, 107 DICK. L. REV. 179, 191 (2002).

<sup>98</sup> *Katz*, 389 U.S. at 361 (Harlan, J., concurring); see also Simmons, *Technology-Enhanced Surveillance*, *supra* note 75, at 714.

<sup>99</sup> For a discussion of the relationship between pervasive technology and the law, see Susan W. Brenner, *Law in an Era of Pervasive Technology*, 15 WIDENER L.J. 667 (2006) (discussing the development and adoption of pervasive technology and its implications for the development of law).

<sup>100</sup> U.S. CONST. amend. IV.

<sup>101</sup> *Kyllo*, 533 U.S. at 34; see also *supra* notes 84–89 and accompanying text.

<sup>102</sup> See *supra* notes 83–86 and accompanying text.

<sup>103</sup> *Kyllo*, 533 U.S. at 40 (citation omitted).

<sup>104</sup> *Id.* at 34 (quoting *Silverman v. United States*, 365 U.S. 505 (1961)).

<sup>105</sup> See Seamon, *supra* note 72, at 1021–26 (discussing the relationship between *Katz* and *Kyllo* and the *Kyllo* majority’s use of an “amalgam” of the *Katz* test and Justice Scalia’s more traditional, location-focused approach); see also Short, *supra* note 94, at 481 (asserting that the *Kyllo* Court “revert[ed] back to a property-based analysis of Fourth Amendment rights”); Sullivan, *supra* note 60, at 984 (characterizing the *Kyllo* Court’s approach as a “retreat from a pure *Katz* analysis” in which “the Court seems to rely on physical location”).

<sup>106</sup> See *supra* note 96 and accompanying text.

to some degree, a reliance on the location where a search occurs.<sup>107</sup> Location is arguably one of the key factors in determining whether society believes a person has a reasonable expectation of privacy in what she is doing.<sup>108</sup> Whether a person is walking down a crowded city street, is in her car, a friend's apartment, or her own house changes the way we conceive of what amount of privacy she could expect. As a result, while *Katz* clearly changed the Fourth Amendment protection calculus,<sup>109</sup> it did not entirely eliminate consideration of location,<sup>110</sup> despite its famous proclamation that "the Fourth Amendment protects people, not places."<sup>111</sup>

## 2. General Public Use

As noted above, Justice Scalia included a particularly puzzling line in *Kyllo*, asserting that when the government conducts surveillance facilitated by technology "not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, the surveillance is a 'search.'"<sup>112</sup> This line is puzzling, in part, because it follows Justice Scalia's assertion that the majority drew a "firm" and "bright" line for surveillance that requires a warrant by "tak[ing] the long view, from the original meaning of the Fourth Amendment forward."<sup>113</sup> But, by conditioning the majority's holding on whether a given technology is not "in general use," Justice Scalia created a line that is neither firm nor bright nor particularly durable.<sup>114</sup> For example, presumably if thermal imaging technology became a staple in corporate America or a popular form of amusement for bored suburbanites, *Kyllo* would come out differently.<sup>115</sup>

---

<sup>107</sup> *Katz v. United States*, 389 U.S. 347, 361 (1967) (Harlan, J., concurring) (noting that the determination of how much protection the Fourth Amendment provides to people "requires reference to a 'place'").

<sup>108</sup> See Simmons, *supra* note 59, at 1314.

<sup>109</sup> See Dunlap, *supra* note 60, at 2176.

<sup>110</sup> Simmons, *supra* note 59, at 1314.

<sup>111</sup> *Katz*, 389 U.S. at 351; see also *id.* at 361 (Harlan, J., concurring) (noting the continuing importance of location in analyzing Fourth Amendment claims).

<sup>112</sup> *Kyllo v. United States*, 533 U.S. 27, 40 (2001) (emphasis added).

<sup>113</sup> *Id.*

<sup>114</sup> See *id.* at 47 (Stevens, J., dissenting) (noting that the protection of the majority's "firm but also bright" line "apparently dissipates as soon as the relevant technology is 'in general public use'"); see also Short, *supra* note 94, at 481–82 (noting that many commentators criticized the *Kyllo* decision as "likely allow[ing] use of invasive technology in areas less tied to the traditional Fourth Amendment centers of personal privacy"); Sorenson, *supra* note 97, at 195 ("Under *Kyllo*, once a sense-enhancement technology is held by a court to be readily available, use of that technology to view the interior of a home can never be considered a search." (footnotes omitted)). *But cf.* Seamon, *supra* note 72, at 1023 (arguing that general public use only "may be a factor" and that this prong was mentioned by the majority under a compulsion to reference precedent) (footnote omitted).

<sup>115</sup> *Cf. supra* text accompanying note 113.

Ignoring the problems inherent in determining when a technology is officially “in general public use,”<sup>116</sup> the main problem with this qualification is that in modern society, technology quickly becomes pervasive.<sup>117</sup> The driving forces of capitalism spur innovation and can turn technologies once thought impracticable for everyday use into staples of modern convenience.<sup>118</sup> Modern society’s rapid technological progress and adoption potentially render this caveat all but moot.<sup>119</sup> Indeed, Justice Scalia recognized this phenomenon to some degree in *Kyllo* when he acknowledged the “power of technology to shrink the realm of guaranteed privacy.”<sup>120</sup>

### 3. Expectation of Privacy

A closely related problem to the general public use caveat in *Kyllo* is the “reasonable expectation of privacy” concept from *Katz* itself.<sup>121</sup> To at least some degree, Justice Scalia’s general public use caveat probably developed from the *Katz* standard.<sup>122</sup> The two concepts are clearly related. As noted earlier, society’s definition of what is reasonable evolves over time.<sup>123</sup> Technology plays a role in the evolution of what is reasonable. As technologies that inherently erode privacy are developed and become pervasive (i.e., in general public use), expectations of privacy are likely to shrink in response. In the *Kyllo*-context, for example, “[w]hen sense-enhancement technology becomes readily available to the public, citizens can have no reasonable expectation that information exposed by the use of such technology will not be

---

<sup>116</sup> *Kyllo*, 533 U.S. at 47 & n.5 (Stevens, J., dissenting) (noting that the majority opinion does not even attempt to define what constitutes “general public use” and that the technology in that case could be obtained with relative ease by anyone in the general public).

<sup>117</sup> Brenner, *supra* note 99, at 671 (discussing the accelerating trend toward the development of pervasive technologies).

<sup>118</sup> For example, during the fall of 2001, Apple introduced the world to the iPod at a time when MP3 players had yet to take off. Rob Walker, *The Guts of a New Machine*, N.Y. TIMES MAG., Nov. 30, 2003, at A79. In two years, Apple sold 1.4 million iPods, developed three versions, and became an icon. *Id.* Consumer technology generally has accelerated the pace of development and adoption of technology in modern society. *See* Brenner, *supra* note 99, at 671.

<sup>119</sup> Arguably, the use of voice-based lie detector tests, which measure the level of stress in a subject’s voice, would already satisfy Justice Scalia’s general public use test. On *MTV Exposed*, unwitting singles are subjected to voice-based lie detector software while answering questions from a potential date. MTV, *MTV Exposed*, [http://www.mtv.com/ontv/dyn/mtv\\_exposed/summary.jhtml](http://www.mtv.com/ontv/dyn/mtv_exposed/summary.jhtml) (last visited Feb. 9, 2007). The questioner then decides who she will choose for a date based on the results of the test. *Id.* Such software is readily available via Internet download. *See, e.g.*, X13-VSA, Voice Stress Analysis Lie Detector Software, <http://www.lie-detection.com/> (last visited Oct. 27, 2007) (selling voice stress analysis software).

<sup>120</sup> *Kyllo*, 533 U.S. at 34.

<sup>121</sup> *Katz v. United States*, 389 U.S. 347, 360 (1967) (Harlan, J., concurring).

<sup>122</sup> *See supra* note 91 and accompanying text.

<sup>123</sup> *See supra* notes 75–78 and accompanying text.

perceived by either other citizens or the government.”<sup>124</sup> Without this reasonable expectation, the Fourth Amendment would provide no relief to people whom law enforcement officers search using this technology without a warrant because no Fourth Amendment search would have taken place.

Both *Katz* and *Kyllo*, thus, leave a gaping hole in the protections afforded by the Fourth Amendment in the face of rapidly advancing technologies. They stand, at least in part, for the proposition that the invasiveness of technology need not be considered as long as the information sought is not reasonably expected to be private.<sup>125</sup>

#### 4. More Reasonableness and the Limits of Fourth Amendment Protections

Beyond the reasonable expectation of privacy analysis inherent in *Katz* and *Kyllo*, the Fourth Amendment also begs a general reasonableness inquiry. The Fourth Amendment limits only “unreasonable searches and seizures.”<sup>126</sup> Thus, if searching people’s thoughts is reasonable, law enforcement would only need to comply with other Fourth Amendment strictures, such as obtaining a warrant pursuant to probable cause, to conduct thought searches.<sup>127</sup> Although the default position under the Fourth Amendment is that searches are reasonable if supported by a warrant and probable cause, other factors can bear on reasonableness as well.<sup>128</sup> A court could, for example, consider the general position that society takes with respect to a given form of search in determining whether that search was reasonable.<sup>129</sup>

Of course, as already noted, what is reasonable changes over time, often in response to new technology. When technology shrinks the realm of what constitutes a reasonable expectation of privacy, that technology necessarily affects how people view the reasonableness of using that technology as a search tool. If technology changes people’s reasonable expectations of privacy, the reasonableness analysis under the rest of the Fourth Amendment changes as well. In the end, because the Fourth Amendment only protects against unreasonable searches, shifting conceptions of what constitutes

---

<sup>124</sup> Sorenson, *supra* note 97, at 191 (footnote omitted).

<sup>125</sup> See *Kyllo*, 533 U.S. at 33 (noting that society must consider an expectation of privacy reasonable in order for a search to exist under the Fourth Amendment); see also Simmons *Technology-Enhanced Surveillance*, *supra* note 75, at 717, 732 (noting that under *Katz* and *Kyllo* it is the nature of the information sought and whether there is a reasonable privacy expectation that determines the constitutionality of a search, not its degree of invasiveness).

<sup>126</sup> U.S. CONST. amend. IV.

<sup>127</sup> Pardo, *supra* note 46, at 1868 (discussing the “default rule” that searches are reasonable under the Fourth Amendment “if conducted pursuant to a warrant supported by probable cause.” *But see* Akhil Reed Amar, *Fourth Amendment First Principles*, 107 HARV. L. REV. 757 (1994) (arguing that no such strictures exist and that reasonableness alone is the core value of the Fourth Amendment).

<sup>128</sup> See Pardo, *supra* note 46, at 1868 (discussing exceptions to the default probable cause based warrant requirement that are all inherently variations of reasonableness calculations).

<sup>129</sup> See, e.g., *Rochin v. California*, 342 U.S. 165 (1952).

reasonable searches could mean that the Fourth Amendment provides little, if any, protection against government use and abuse of thought-reading technology. As a result, other protections are likely needed.

### C. Fifth Amendment Self-Incrimination

Such protections might be found in the Fifth Amendment.<sup>130</sup> The Fifth Amendment's prohibition on compelled self-incrimination and the Supreme Court's subsequent treatment of that prohibition figure prominently in the potential application of thought-reading technology to law enforcement settings.<sup>131</sup> Unfortunately, the Court's self-incrimination jurisprudence is at least as tricky as its Fourth Amendment search jurisprudence and is equally ill-equipped to deal with thought-reading technology. Indeed, some commentators have called it "an unsolved riddle of vast proportions, a Gordian knot in the middle of our Bill of Rights."<sup>132</sup> Others have characterized the Court's attempts to explain the Fifth Amendment as heavy on "stirring rhetoric" and light on satisfying reason and justification.<sup>133</sup> The Court itself has recognized that the Fifth Amendment represents "fundamental values," but at the same time no one has figured out precisely "just what it is supposed to do or just whom it is intended to protect."<sup>134</sup>

The Fifth Amendment details three criteria that serve to trigger protections against self-incrimination.<sup>135</sup> There must be (1) a criminal case involved (2) without government compulsion of the defendant (3) "to be a witness against himself."<sup>136</sup> The first element is easily determined: if a case is not a criminal case, the Fifth Amendment protection against self-incrimination does not apply.<sup>137</sup> The second and third elements present the real complexity of applying Fifth Amendment protections to thought-reading technology.

---

<sup>130</sup> "No person . . . shall be compelled in any criminal case to be a witness against himself . . ." U.S. CONST. amend. V.

<sup>131</sup> See Bailey, *supra* note 13 (asking whether brain fingerprinting raises self-incrimination concerns and finding an analogy between brain fingerprinting and forensic evidence, such as fingerprints or DNA, conceptually troublesome).

<sup>132</sup> Akhil Reed Amar & Renée B. Lettow, *Fifth Amendment First Principles: The Self-Incrimination Clause*, 93 MICH. L. REV. 857, 857 (1995).

<sup>133</sup> Allen & Mace, *supra* note 33, at 244.

<sup>134</sup> *Murphy v. Waterfront Comm'n of N.Y. Harbor*, 378 U.S. 52, 56 n.5 (1964) (quoting Harry Kalven, Jr., *Invoking the Fifth Amendment—Some Legal and Impractical Considerations*, 9 BULL. ATOMIC SCIENTISTS 181, 182 (1953)); see also Michael Edmund O'Neill, *The Fifth Amendment in Congress: Revisiting the Privilege Against Compelled Self-Incrimination*, 90 GEO. L.J. 2445, 2445–46 (2002) (noting that the Fifth Amendment is like "Mom, baseball, and apple pie" but comes from "somewhat ambiguous historical roots").

<sup>135</sup> U.S. CONST. amend. V.

<sup>136</sup> *Id.*

<sup>137</sup> See *Chavez v. Martinez*, 538 U.S. 760, 766–67 (2003).

In attempting to explain the meaning of the phrase “witness against himself,” the Court determined that the Fifth Amendment only protects communications that are “testimonial, incriminating, and compelled.”<sup>138</sup> At the outset, one obvious consideration is whether the state compelled a defendant. Though compulsion may seem a relatively straightforward proposition, the Court’s jurisprudence in this area has produced a range of government behavior that may seem to compel a defendant but is acceptable constitutionally.<sup>139</sup>

Much of the determination of whether the state unconstitutionally compelled a defendant hinges on the distinction between testimonial and physical information. The Court created this distinction between testimonial or communicative evidence and “real or physical evidence” to distinguish what is protected by the Fifth Amendment (testimonial) from what is not protected (physical).<sup>140</sup> However, this distinction is problematic in practice for courts and in theory for commentators, and it cannot provide answers in difficult cases.<sup>141</sup> The unsatisfying testimonial/physical doctrine contributes to “the sense that there is a conceptual hole at the middle of the Fifth Amendment.”<sup>142</sup> This Part briefly reviews the Court’s precedents with regard to compulsion and the testimonial/physical evidence distinction.

### 1. Compulsion

The Fifth Amendment only protects criminal suspects from being compelled to testify against themselves.<sup>143</sup> Thus, in order for the Fifth Amendment to be invoked, the Court has held that there must be some government effort to overcome the free will of the suspect to obtain testimony against himself.<sup>144</sup> The test enunciated by the Court to determine whether the state compelled a defendant is “whether, considering the totality of the circumstances, the free will of the witness was overborne.”<sup>145</sup>

---

<sup>138</sup> *Hiibel v. Sixth Judicial Dist. Court of Nev., Humboldt County*, 542 U.S. 177, 189 (2004) (citing *United States v. Hubbell*, 530 U.S. 27, 34–38 (2000)); see also Christopher T. Fredrikson, *What’s Done is Done: Recent Developments in Self-Incrimination Law*, 2005 ARMY LAW. 19, 21.

<sup>139</sup> See *Schmerber v. California*, 384 U.S. 757, 764 (1966); Allen & Mace, *supra* note 33, at 251–55.

<sup>140</sup> See *Pennsylvania v. Muniz*, 496 U.S. 582, 591 (1990); *Schmerber*, 384 U.S. at 764.

<sup>141</sup> Amar & Lettow, *supra* note 132, at 857–58 (noting confusion among courts and commentators on the purposes of the Fifth Amendment); Allen & Mace, *supra* note 33, at 260.

<sup>142</sup> Allen & Mace, *supra* note 33, at 249.

<sup>143</sup> U.S. CONST. amend. V.

<sup>144</sup> *United States v. Washington*, 431 U.S. 181, 188 (1977) (citing *Rogers v. Richmond*, 365 U.S. 534, 544 (1961)).

<sup>145</sup> *Id.* Without elaborating on all the philosophical details, this compulsion test can be understood as relying on the concept of free will in discerning whether a suspect was compelled. See Allen & Mace, *supra* note 33, at 250. As such, “[i]f free will does not exist . . . the test is conceptually and functionally bankrupt.” *Id.* Unraveling the age-old debate of free will versus

Incriminating statements “are admissible at trial only if the government first apprises the defendant of the right to remain silent and that the defendant’s statements can be used against him or her, and the defendant then knowingly waives the right.”<sup>146</sup>

Importantly, however, the Court has also held that requiring a suspect “to submit to testing . . . to determine his guilt or innocence on the basis of physiological responses, whether willed or not, is to evoke the spirit and the history of the Fifth Amendment.”<sup>147</sup> That said, the Fifth Amendment only applies to acts of the defendant, not to the actions of the state, in analyzing information regarding physical evidence taken from the defendant.<sup>148</sup> As a result, the Fifth Amendment does not prevent the state from requiring suspects to submit to breathalyzer tests,<sup>149</sup> or even from compelling suspects to provide blood samples.<sup>150</sup> Indeed, various court decisions have essentially created a continuum of compulsion that ranges from acceptable to unacceptable.<sup>151</sup> For example, courts have determined that the Fifth Amendment is not implicated in compelling defendants “to submit to fingerprinting, photographing, or measurements, to write or speak for identification, to appear in court, to stand, to assume a stance, to walk, or to make a particular gesture.”<sup>152</sup> However, the government violates the Fifth Amendment when it applies too much pressure in seeking certain kinds of information.<sup>153</sup> The distinction turns on the difference between testimonial and physical self-incrimination.

## 2. Testimonial Versus Physical

The testimonial versus physical distinction is where the real battles in self-incrimination jurisprudence are fought.<sup>154</sup> For example, in *Schmerber v. California*,

---

determinism is far beyond the scope of this Note. That said, thought-reading technology certainly raises serious philosophical questions in this arena with which the medical, legal, and philosophical worlds will have to grapple eventually. Fortunately, the various professions implicated by the advancing field of neuroscience are already beginning to tangle with some related questions. *See, e.g., Are Your Thoughts Your Own?*, *supra* note 7, at 407–09 (discussing the emerging field of neuroethics); Heneghan, *supra* note 13 (noting the “potential for misuse” of neuroscience technology).

<sup>146</sup> *Fifth Amendment at Trial*, 32 GEO. L.J. ANN. REV. CRIM. PROC. 567, 568–69 (2003) (footnotes omitted).

<sup>147</sup> *Schmerber v. California*, 384 U.S. 757, 764 (1966).

<sup>148</sup> *Id.* at 761 n.5.

<sup>149</sup> *See People v. Shaw*, 531 N.E.2d 650, 651 (N.Y. 1988) (citing *Schmerber* generally to support the proposition that there is no constitutional right to refuse a breathalyzer test).

<sup>150</sup> *Schmerber*, 384 U.S. at 765.

<sup>151</sup> Allen & Mace, *supra* note 33, at 251–55.

<sup>152</sup> *Schmerber*, 384 U.S. at 764 & n.8.

<sup>153</sup> Allen & Mace, *supra* note 33, at 251–55.

<sup>154</sup> *Schmerber*, 384 U.S. at 762–63 (noting that “[h]istory and a long line of authorities in lower courts have consistently limited” the Fifth Amendment’s protections to situations involving compelled testimonial evidence).

the issue that divided the Court was whether a blood sample was testimonial in nature.<sup>155</sup> In that case, the defendant was in an automobile accident and, while at the hospital receiving treatment for injuries sustained in the crash, was arrested for driving under the influence.<sup>156</sup> On the advice of counsel, the defendant refused to give a blood sample for use in determining whether he was drunk.<sup>157</sup> Over the defendant's objections, the arresting officer directed a doctor to take a sample of his blood; the state later used the results at trial to convict him.<sup>158</sup>

In a five-to-four decision, the Court held that the state's actions did not violate the Fifth Amendment's Self-Incrimination Clause because the evidence was not testimonial.<sup>159</sup> The majority forcefully argued the use of such physical evidence in no way implicated the Fifth Amendment,<sup>160</sup> despite the fact that a state actor forced the defendant to allow a doctor to stick him with a needle to provide the evidence that sealed his conviction.<sup>161</sup> The majority explained:

In the present case, however, no such problem of application is presented. Not even a shadow of testimonial compulsion upon or enforced communication by the accused was involved either in the extraction or in the chemical analysis. Petitioner's testimonial capacities were in no way implicated; indeed, his participation, except as a donor, was irrelevant to the results of the test, which depend on chemical analysis and on that alone. Since the blood test evidence, although an incriminating product of compulsion, was neither petitioner's testimony nor evidence relating to some communicative act or writing by the petitioner, it was not inadmissible on privilege grounds.<sup>162</sup>

---

<sup>155</sup> *Id.* at 765 (arguing for the majority that the blood test and its results did not involve "even a shadow of testimonial compulsion upon or enforced communication by the accused"). The dissent contended otherwise, arguing:

[T]he compulsory extraction of petitioner's blood for analysis so that the person who analyzed it could give evidence to convict him had both a "testimonial" and a "communicative nature." The sole purpose of this project which proved to be successful was to obtain "testimony" from some person to prove that petitioner had alcohol in his blood at the time he was arrested. And the purpose of the project was certainly "communicative" in that the analysis of the blood was to supply information to enable a witness to communicate to the court and jury that petitioner was more or less drunk.

*Id.* at 774 (Black, J., dissenting).

<sup>156</sup> *Id.* at 758 (majority opinion).

<sup>157</sup> *Id.* at 759.

<sup>158</sup> *Id.* at 758–59.

<sup>159</sup> *Id.* at 765.

<sup>160</sup> *Id.*

<sup>161</sup> *Id.* at 758.

<sup>162</sup> *Id.* at 765.

The four dissenting justices strenuously objected to this characterization of the blood sample as non-testimonial.<sup>163</sup> Chief Justice Warren reiterated his dissent from an earlier case involving similar facts.<sup>164</sup> Justice Black's dissent argued that because the blood analysis was used for the purpose of communicating information about the defendant that was then used against him at trial, the Court should apply the testimonial standard to the evidence.<sup>165</sup> Justices Douglas and Fortas echoed the sentiments of the Chief Justice.<sup>166</sup> Justice Fortas specifically focused on the intrusive, violent nature of the blood extraction.<sup>167</sup>

In another alcohol-fueled case, the Court managed to muddle the murky contours of testimonial/physical evidence distinction further. In *Pennsylvania v. Muniz*, the Court held that a police officer compelled testimonial evidence from a suspected drunk driver by asking him the date of his sixth birthday.<sup>168</sup> Once again, the key battle over whether the state violated the Fifth Amendment was whether the officer elicited testimonial evidence or physical evidence.<sup>169</sup> The testimonial issue again splintered the

---

<sup>163</sup> *Id.* at 772–79.

<sup>164</sup> *Id.* at 772 (Warren, C.J., dissenting). The case referred to by the Chief Justice was *Breithaupt v. Abram*, which dealt with a blood sample drawn from an unconscious defendant. *Id.*; *Breithaupt v. Abram*, 352 U.S. 432, 432 (1957). Chief Justice Warren dissented in *Breithaupt* because there was an “invasion of the body” that he believed should be determinative in the absence of consent. *Id.* at 441 (Warren, C.J., dissenting). He stressed that whether a defendant was conscious and objected to the taking of the blood sample was irrelevant given the invasive nature of the governmental action. *Id.*

<sup>165</sup> *Schmerber*, 384 U.S. at 774 (Black, J., dissenting). Beyond his complaints that the majority erred in holding that the blood sample was physical, not testimonial, evidence, Justice Black lamented the use of the words testimonial and communicative to restrict the scope of the Fifth Amendment:

These words are not models of clarity and precision as the Court's rather labored explication shows. Nor can the Court, so far as I know, find precedent in the former opinions of this Court for using these particular words to limit the scope of the Fifth Amendment's protection. There is a scholarly precedent, however, in the late Professor Wigmore's learned treatise on evidence. . . . Though my admiration for Professor Wigmore's scholarship is great, I regret to see the word he used to narrow the Fifth Amendment's protection play such a major part in any of this Court's opinions.

*Id.* (citations omitted).

<sup>166</sup> *Id.* at 778–79 (Douglas, J., & Fortas, J., in separate dissenting opinions).

<sup>167</sup> *Id.* at 779 (Fortas, J., dissenting) (“As prosecutor, the State has no right to commit any kind of violence upon the person, or to utilize the results of such a tort, and the extraction of blood, over protest, is an act of violence.”).

<sup>168</sup> *Pennsylvania v. Muniz*, 496 U.S. 582, 585–86 (1990).

<sup>169</sup> *Id.* at 592–93 (citing the argument in the state's brief that the inference created by the officer's question was permissible because it was based on “the physiological functioning of [Muniz's] brain”); *see also*, Brief of Petitioner at 15–16, *Muniz*, 496 U.S. 582 (No. 89-213).

Court, with five justices agreeing that the birthday question was testimonial and four dissenting on that point.<sup>170</sup>

Justice Brennan, who also wrote the majority opinion in *Schmerber* holding that the blood test was permissible physical evidence,<sup>171</sup> rejected the state's assertion in *Muniz* that the response to the officer's birthday question was simply physical evidence just like the "physiological makeup of his blood and the timbre of his voice."<sup>172</sup> Justice Brennan asserted that the state misconstrued the proper question in the case.<sup>173</sup> According to Justice Brennan, the proper question was "whether the incriminating inference of mental confusion is drawn from a testimonial act or from physical evidence."<sup>174</sup> Because the inference in *Muniz* arose from an act the Court deemed testimonial—i.e., answering a police officer's question incorrectly—the police violated Muniz's Fifth Amendment self-incrimination privilege.<sup>175</sup> Presumably, had the officer forcibly drawn a blood sample from Muniz, the sample would have been admissible even though his response to a simple question was deemed testimonial.<sup>176</sup>

To reach this somewhat counter-intuitive result, the Court relied on the history and policies underlying the Fifth Amendment.<sup>177</sup> The Court noted that the Fifth Amendment was designed to guard against historical abuses, such as those perpetrated in the ecclesiastical courts and the Star Chamber.<sup>178</sup> Based on this historical reading, the Court decided that the primary protection offered by the Fifth Amendment was to prevent instances where suspects "must face the modern-day analog of the historic trilemma" of "truth, falsity, or silence."<sup>179</sup> As such, verbal statements tend to be testimonial because they tend to convey information.<sup>180</sup> Drawing blood, however, does not require an act on the defendant's part.<sup>181</sup> While a blood sample may communicate information, it does not subject the defendant to the trilemma and falls outside of the Court's Fifth Amendment concerns.<sup>182</sup>

---

<sup>170</sup> *Muniz*, 496 U.S. 582.

<sup>171</sup> *Schmerber*, 384 U.S. 757.

<sup>172</sup> *Muniz*, 496 U.S. at 593.

<sup>173</sup> *Id.*

<sup>174</sup> *Id.*

<sup>175</sup> *Id.* at 600.

<sup>176</sup> *Schmerber*, 384 U.S. at 765.

<sup>177</sup> *Muniz*, 496 U.S. at 594–97.

<sup>178</sup> *Id.* at 595–96 (quoting *Doe v. United States*, 487 U.S. 201, 212 (1988)).

<sup>179</sup> *Id.* at 596–97.

<sup>180</sup> *Id.* at 597.

<sup>181</sup> *Schmerber*, 384 U.S. at 765.

<sup>182</sup> *Id.* Ironically, perhaps, the Court's conclusion based on its reading of history leads to the likelihood that the state could now obtain incriminating evidence by violent means (such as strapping a patient down and taking a blood sample) but not by simple questioning. Given the Court's concern for the "stark brutality" of the Star Chamber and other historic abuses that gave rise to the Fifth Amendment, the end result of its reasoning demonstrates the difficulties that the Court has in explaining the scope of Fifth Amendment protections. *Muniz*, 496 U.S. at 596 (quoting *Ullmann v. United States*, 350 U.S. 422, 428 (1956)).

### III. DOES THOUGHT-READING TECHNOLOGY “SEARCH” A DEFENDANT FOR COMPELLED TESTIMONY?

As a baseline matter, the first test that thought-reading technology must pass would be the reliability standard set forth by *Daubert*.<sup>183</sup> Thought-reading technology must first be fully developed before it could be deemed sufficiently reliable to satisfy *Daubert*.<sup>184</sup> However, given the pace of research in this area, it is safe to assume that the technology will likely, at some point, be able to pass the *Daubert* barrier.<sup>185</sup> Assuming science eventually develops technology that is sufficiently reliable to monitor the functions of a suspect’s brain and read her thoughts, what then?

There would be pressure to use this technology in not only solving, but preventing crimes. For example, if thought-reading technology is sufficiently refined, why not deploy it as an additional layer of security at airports to detect people with terrorist-like thoughts or inclinations?<sup>186</sup> The possibilities for this technology are boundless. Telling police they will be handicapped by not allowing them to take advantage of this miraculous new technology may not be popular. Just because something is popular, of course, does not mean it is constitutional or should be implemented. To that end, would police use of thought-reading technology be permissible under the Supreme Court’s current Fourth and Fifth Amendment jurisprudence, or would those doctrines need to be stretched to allow law enforcement to use this technology?

#### A. Searching the Mind?

The first question thought-reading technology would pose is whether it is a search under the Fourth Amendment.<sup>187</sup> If so, a court would have to determine whether such a search is reasonable.<sup>188</sup> As discussed earlier, following *Katz* and *Kyllo*, the question of whether thought-reading constituted a search requires a determination of whether the defendant had a reasonable expectation of privacy in his thoughts and the closely related idea of whether the technology in question is in general public use.<sup>189</sup> Despite *Katz*’s “people, not places” language,<sup>190</sup> the location of a thought-reading scan could

---

<sup>183</sup> *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 590–93 & n.9 (1993).

<sup>184</sup> *See id.* (defining “evidentiary reliability” as based upon scientific validity).

<sup>185</sup> *See supra* notes 13–23 and accompanying text.

<sup>186</sup> For an analogous hypothetical using slightly different technology, see Dery, *supra* note 46, examining the constitutional implications of thermal imaging lie detection technology.

<sup>187</sup> *See* U.S. CONST. amend. IV. The Fourth Amendment provides a good starting place because, to some degree, the protections against unreasonable searches in the Fourth Amendment can be viewed as encompassing the Fifth Amendment’s protection against self-incrimination. For a thorough explanation of this argument, see Pardo, *supra* note 46, at 1879–81.

<sup>188</sup> Pardo, *supra* note 46, at 1867.

<sup>189</sup> *See supra* Part II.A (discussing the tests for determining when a search occurs).

<sup>190</sup> *Katz v. United States*, 389 U.S. 347, 351 (1967).

also play a role. Indeed, there could be a number of factors wrapped up in determining whether an individual had a reasonable expectation of privacy in his thoughts.

For starters, Justice Scalia's "general public use" language from *Kyllo* would have a clear bearing on the reasonable expectations of privacy.<sup>191</sup> If only government and medical facilities have access to thought-reading devices and software, then a defendant would likely have a reasonable expectation that her thoughts would be private. But thought-reading technology could ultimately become ubiquitous. Businesses could use it to anticipate customers' needs. Friends could use it as part of a video game system, immersing themselves more fully in the gaming experience by controlling the screen simply by thinking of moves.<sup>192</sup> Car manufacturers could develop user interfaces that allow people to interact with their vehicle simply by thinking.

If thought-reading technology becomes widely adopted as consumer technology, as voice-based lie detectors have apparently become,<sup>193</sup> societal conceptions of private thoughts could be vastly different than they are today. If everyone could figure out what everyone else is thinking, would the concept of private thoughts even continue to exist? In a world where thought-reading technology could pervade a home, allowing mental direction to turn on and off lights, adjust the heat, dial a neighbor, or change the channel, why would people not expect law enforcement to use some form of thought-reading to catch criminals or even potentially prevent crime?<sup>194</sup> That would only seem reasonable.

Alternatively, consider a society where thoughts are routinely recorded, bought, and sold in open markets (white and black).<sup>195</sup> What constitutes a reasonable expectation of privacy in such a world is unclear. Arguably, such recordings would be no different from a video recording made on a camcorder. To a certain degree we can expect that such recordings will stay somewhat private if we only use them in the privacy of our own home. The advent of the Internet and digital video altered this expectation.<sup>196</sup> Now when such digital recordings are uploaded to the Internet, that

---

<sup>191</sup> *Kyllo v. United States*, 533 U.S. 27, 34 (2001).

<sup>192</sup> See Fitzpatrick, *supra* note 5 (detailing an experiment in which an epileptic child controlled a video game with his mind); Lombardi, *supra* note 14 (discussing plans to release a helmet that reads people's minds to control video games).

<sup>193</sup> See *supra* note 119 (discussing the ready availability of voice-based lie detection software over the Internet).

<sup>194</sup> This is especially true if people's intentions can indeed be gleaned from an fMRI scan. See Scan "Can Read," *supra* note 14. The idea of using thought-reading to prevent crimes before they happen is similar to the concept of "Precrime" embodied in the Stephen Spielberg movie *Minority Report* (which was loosely based on a Philip K. Dick short story) though in that case the "technology" was not thought-reading but clairvoyance. MINORITY REPORT, *supra* note 2.

<sup>195</sup> See STRANGE DAYS, *supra* note 2.

<sup>196</sup> See David V. Richards, Note, *Posting Personal Information on the Internet: A Case for Changing the Legal Regime Created by § 230 of the Communications Decency Act*, 85 TEX. L. REV. 1321 (2007) (discussing the amount of personal information that may be

reasonable expectation of privacy vanishes altogether—all of those recordings become fodder for comedians, voyeurs, and the unscrupulous.<sup>197</sup> Perhaps a line could be drawn such that non-law-breaking thought recordings are reasonably expected to be private while such an expectation would not attach to thought recordings involving criminal activity.<sup>198</sup> That way, ordinary law-abiding citizens could not have their thought recordings (or thoughts) searched by police without reasonable suspicion. If airport police scan the brain of someone who is planning to blow up a plane, the would-be terrorist could not have a reasonable expectation of privacy in such thoughts, and there would have been no search for Fourth Amendment purposes.

Or maybe a better way to conceive of reasonable expectations in light of pervasive thought-reading technology would be a return to the location based reasoning that dominated before *Katz*.<sup>199</sup> Thoughts read in public places (airports, malls, casinos, offices, etc.) would not carry a reasonable expectation of privacy because thought-reading technology would be presumed to be in use.<sup>200</sup> Thoughts read in homes or offices would carry a reasonable expectation of privacy and receive some of the Fourth Amendment's protections.<sup>201</sup> Perhaps thoughts on car rides or long walks on the beach would carry a middle ground expectation of privacy, depending on the context.<sup>202</sup>

---

posted on the web and the lack of substantial law enforcement or legal protection of things that are posted).

<sup>197</sup> Facebook, MySpace, and YouTube, for example, clearly impact our current conceptions of home videos as private. See Facebook, <http://www.facebook.com> (last visited Feb. 14, 2008) (describing the site's service as "a social utility that connects you with the people around you"); MySpace, <http://www.myspace.com> (last visited Feb. 14, 2008) (billing itself as "a place for friends"); YouTube, <http://youtube.com> (last visited Feb. 14, 2008) (declaring "Broadcast Yourself"). Because of these websites, no video can really be considered a "private" video anymore.

<sup>198</sup> There is at least some support for a line to be drawn based on the Court's Fourth Amendment jurisprudence. Cf. *Florida v. Bostick*, 501 U.S. 429, 438 (1991) (noting that a "reasonable person" for purposes of determining whether an encounter with police is consensual "presupposes an *innocent* person"). Further, one could argue that thoughts involving a crime never carry the same kind of reasonable expectation of privacy as thoughts about one's private life. The thoughts are about a violation of the rules of society. As such, it could be said that the defendant should not expect to be able to keep such thoughts hidden in the face of thought-reading technology. Society has a right to protect itself from harm that a future defendant is planning, and society should not have to give the same kind of protection to such illicit thoughts as it would afford non-criminal thoughts.

<sup>199</sup> See Simmons, *supra* note 59, at 1303; Steinberg, *supra* note 58, at 1053.

<sup>200</sup> This situation is analogous to the current reduced expectation of privacy in airports. See Brett Andrew Skean, Comment, *The Fourth Amendment and the New Face of Terrorism: How September 11th Could Change the Way America Flies*, 22 N. ILL. U. L. REV. 567, 585–87 (2002) (noting that as concerns of terrorism increase, certain invasive searches become expected and standard practice in airports).

<sup>201</sup> *Maryland v. Buie*, 494 U.S. 325, 331 (1990) ("[A] search of the house or office is generally not reasonable without a warrant issued on probable cause.").

<sup>202</sup> Determining whether a search is reasonable for Fourth Amendment purposes would also turn on many of the same issues discussed in the preceding paragraphs. See *supra* Parts II.A,

### B. *Compelling Testimony?*

As an initial matter, for thought-reading to implicate the Fifth Amendment, there must be some type of compulsion involved.<sup>203</sup> The government must do something to overcome a defendant's will.<sup>204</sup> In a sense, thought-reading technology does not overcome a defendant's will. Rather, it simply reads, among other things, what her will is. The defendant does not have to make a choice to reveal anything—the technology simply scans the brain and reveals all of it.<sup>205</sup> Thought-reading technology may not require defendants to say anything or respond to any stimuli. In such a case, where is the compulsion? If it cannot be found, the Fifth Amendment is useless as protection from thought-reading technology.

Recall that the key battleground in the Fifth Amendment self-incrimination arena focuses on whether the information sought is testimonial or physical in nature.<sup>206</sup> Forced extraction of someone's blood is not protected by the Fifth Amendment because it does not involve communication of testimonial information.<sup>207</sup> Answering questions designed to elicit incriminating answers can be protected.<sup>208</sup> Would thought-reading technology be simply another form of physical evidence akin to drawing blood? Or should it be deemed testimonial given that the state would draw incriminating inferences from physical information that is really geared to elicit testimony?

There are strong arguments on both sides of this equation. FMRI and other potential thought-reading technologies work in the same fundamental way as blood tests—both analyze physical characteristics exhibited by a person for the purpose of gaining information that could be potentially incriminating.<sup>209</sup> Consider, for example, a hit-and-run case where the police track down the person driving the car. If the police found the person quickly, they could take a blood sample (or administer a breathalyzer test) and determine whether the driver was drunk. Alternatively, the police theoretically could simply subject the driver to a quick, painless brain scan to determine

---

II.B.4. Although there would be an added layer of protection from the requirement that a warrant accompany a search or an exception for a warrantless search, the question still devolves into one of whether reading thoughts is reasonable. If thought-reading technology changes our conceptions of what is and is not reasonable, this really provides no additional protections at all.

<sup>203</sup> See *supra* Part II.C.1.

<sup>204</sup> *United States v. Washington*, 431 U.S. 181, 188 (1977) (citing *Rogers v. Richmond*, 365 U.S. 534, 544 (1961)).

<sup>205</sup> See *Allen & Mace*, *supra* note 33, at 248–50 (discussing a parallel hypothetical using a lie detector); Pardo, *supra* note 46, at 1863 (noting that under a “cruel-trilemma theory” someone subjected to an enhanced lie detector that scans brain responses does not have a choice).

<sup>206</sup> See *supra* Part II.C.2.

<sup>207</sup> *Schmerber v. California*, 384 U.S. 757, 765 (1966).

<sup>208</sup> *Pennsylvania v. Muniz*, 496 U.S. 582, 585–87 (1990).

<sup>209</sup> *Cf. Allen & Mace*, *supra* note 33, at 260–61 (noting that the testimonial/physical distinction cannot capture the differences between the data pulled from a blood sample and from a forced lie detector test).

whether the memories of the accident were impaired by alcohol or other substances. Either way, the tests are designed to get at the same basic information through *physical* analysis of the driver. No communication need take place—the driver would not necessarily open his mouth and speak in response to any government actions, thus triggering Fifth Amendment protections.<sup>210</sup> Thought-reading technology need not even subject a defendant to the “cruel trilemma” of “truth, falsity, or silence.”<sup>211</sup>

On the other hand, it could be argued that the Court’s current Fifth Amendment analysis would offer protections from thought-reading devices. After all, in *Schmerber*, Justice Brennan specifically noted that lie detectors may be an example of physical evidence that is, in reality, testimonial.<sup>212</sup> The Court distinguished lie detectors, which measure physiological reactions to questioning, from other forms of physical evidence.<sup>213</sup> Justice Brennan noted that, ultimately, the protections afforded by the Fifth Amendment are “as broad as the mischief against which it seeks to guard.”<sup>214</sup> “To compel a person to submit to testing in which an effort will be made to determine his guilt or innocence on the basis of physiological responses, whether willed or not, is to evoke the spirit and history of the Fifth Amendment.”<sup>215</sup> Clearly, for Justice Brennan, thought-reading technology would violate a defendant’s Fifth Amendment right against self-incrimination. But this result does not necessarily follow based on the Court’s testimonial/physical test and precedents.<sup>216</sup>

---

<sup>210</sup> See *Muniz*, 496 U.S. at 593 (noting that an “incriminating inference” must come from a testimonial act to trigger Fifth Amendment protections).

<sup>211</sup> *Id.* at 595–97 (discussing the trilemma); see also Pardo, *supra* note 46, at 1863–64 (discussing the possibility that the government could use a thought-reading lie detector on a suspect without violating the Fifth Amendment’s Self-Incrimination Clause using a reliability analysis because the defendant would not face any choice with regard to revealing any information).

<sup>212</sup> *Schmerber*, 384 U.S. at 764 (“Some tests seemingly directed to obtain ‘physical evidence,’ for example, lie detector tests measuring changes in body function during interrogation, may actually be directed to eliciting responses which are essentially testimonial.”).

<sup>213</sup> *Id.*

<sup>214</sup> *Id.* (quoting *Counselman v. Hitchcock*, 142 U.S. 547, 562 (1892)).

<sup>215</sup> *Id.*; see also *Braswell v. United States*, 487 U.S. 99, 126 (1988) (Kennedy, J., dissenting) (“Physical acts will constitute testimony if they probe the state of mind, memory, perception, or cognition of the witness. The Court should not retreat from the plain implications of this rule and hold that such testimony may be compelled, even when self-incriminating, simply because it is not spoken.”); *Allen & Mace*, *supra* note 33, at 266–67 (citing *Doe v. United States*, 487 U.S. 201, 211 (1988)) (“It is the ‘extortion of information from the accused,’ the attempt to force him ‘to disclose the contents of his own mind,’ that implicates the Self-Incrimination Clause.” (quoting *Couch v. United States*, 409 U.S. 322, 328 (1973); *Curcio v. United States*, 354 U.S. 118, 128 (1957) (internal citations omitted))).

<sup>216</sup> See *Allen & Mace*, *supra* note 33, at 261 (noting that the testimonial test cannot “explain the reoccurring specter of the polygraph”). At least one commentator agrees with Justice Brennan in the lie detector setting. See Dery, *supra* note 46, at 247 (noting that evidence that could be obtained by using a thermal imaging lie detector while asking someone if they

Justice Brennan's formulation of the testimonial/physical test in *Muniz* is instructive. There, he stated that the test is "whether the incriminating inference . . . is drawn from a testimonial act or from physical evidence."<sup>217</sup> Lie detector tests require an examiner to ask questions and then gauge physiological responses in concert with the answer to determine the veracity of the subject's statement.<sup>218</sup> The answer constitutes a testimonial act, and the physical evidence is really being gathered to determine that act's truth.<sup>219</sup> If there is no testimonial act involved, this distinction is of no help.

With thought-reading technology, there would not necessarily be any testimonial act required. A mature form of brain fingerprinting need not elicit responses from stimuli to determine the presence of latent knowledge. The defendant would not ever engage in any testimonial act—looking at physical evidence could determine everything the police would need to know. For example, expanding current routine procedure, police could scan the thoughts of suspects for information that only the criminal would know. In essence, the scan would function precisely the way a forced blood sample does. Both would be situations where police take physical evidence and examine it to determine whether it demonstrates guilt or innocence. Although thought-reading technology may violate the "spirit and history of the Fifth Amendment,"<sup>220</sup> the Court's testimonial/physical evidence distinction does not necessarily lead to the conclusion that thought-reading technology would actually violate the Fifth Amendment.

#### IV. A NEW PROPOSAL FOR DEALING WITH THOUGHT-READING TECHNOLOGY UNDER THE FOURTH AND FIFTH AMENDMENTS

Neither the Court's current Fourth or Fifth Amendment doctrines lead necessarily to the conclusion that thought-reading technology would be verboten under the Constitution. To the contrary, when pushed, current doctrines leave open the very real possibility that the wrong facts and societal conditions could open the door to law enforcement use of such technology. Just because current Supreme Court doctrine may not prohibit law enforcement use of thought-reading technology should not dictate permissible use of thought-reading technology by law enforcement. This is precisely the result the Court should avoid. The Constitution generally and the Bill of Rights specifically were designed in large part to protect individuals from governmental tyranny.<sup>221</sup> Any regime that permits the use of technology to read people's thoughts and determine guilt or innocence based on reading minds necessarily creates

---

intended to commit a terrorist act on a plane is "precisely the kind that is covered by the Fifth Amendment as 'testimonial' or 'communicative'").

<sup>217</sup> *Pennsylvania v. Muniz*, 496 U.S. 582, 593 (1990).

<sup>218</sup> *Schmerber*, 384 U.S. at 764.

<sup>219</sup> Michael S. Pardo, *Neuroscience Evidence, Legal Culture, and Criminal Procedure*, 33 AM. J. CRIM. L. 301, 333 (2006).

<sup>220</sup> *Schmerber*, 384 U.S. at 764.

<sup>221</sup> *See Wilson v. New*, 243 U.S. 332, 366–67 (1917) (Day, J., dissenting).

an environment that is ripe for the kind of government oppression that the Constitution should prevent.

The preceding Part took a mechanical approach to analyzing thought-reading technology under the Court's current Fourth and Fifth Amendment tests and purposely stretched the tests to the extreme.<sup>222</sup> Undoubtedly, as the Court grapples with the ramifications of applying its precedent to thought-reading technology, it would use a more flexible approach designed to curb some of the worst potential abuses. The preceding Parts were designed to emphasize the serious potential problems with the Court's current approaches. That a mechanical analysis of current Court rules could permit any use of thought-reading technology is unsettling. This, coupled with the murky, confused state of affairs in Fourth and Fifth Amendment doctrines begs for a new approach to the Fourth and Fifth Amendments, taking into account rapidly advancing, potentially invasive technology.

#### *A. Toward a New Set of Standards*

The Court's Fourth and Fifth Amendment jurisprudence discussed in this Note can be viewed as a set of responses to changing technology. Both standards attempt to balance some of the fundamental principles underlying the Fourth and Fifth Amendments with technological advances and the needs of law enforcement.<sup>223</sup> However, the technology the Court has dealt with to date, while transformational, was not as revolutionary as thought-reading technology. Thought-reading technology presents challenges unlike any other technology in history. Not surprisingly, the Court's current tests are simply inadequate to deal with the challenges presented by thought-reading technology in a satisfying way.

#### *B. Cognition and Its Limitations*

At least one set of commentators has tried to develop a coherent framework for analyzing the Court's self-incrimination jurisprudence that could be adapted to deal with thought-reading technology generally. Allen and Mace argue that based on the Court's Fifth Amendment self-incrimination cases, the true rule for determining Self-Incrimination Clause violations is "that the government may not compel revelation of the incriminating substantive results of compelled cognition."<sup>224</sup> This seductively

---

<sup>222</sup> See discussion *supra* Part III.

<sup>223</sup> See, e.g., *Kyllo v. United States*, 533 U.S. 27, 34 (2001) (discussing the ability of technology to shrink privacy protections of the Fourth Amendment and purporting to draw the line of the limits of such technological effects). In the Fifth Amendment context, *Schmerber*, for example, dealt with a blood test that did not exist at the time of the country's founding. 384 U.S. 757. The Court's decision in *Schmerber* can be viewed, in part, as an attempt to fit this new technology into the Fifth Amendment framework. See *id.*

<sup>224</sup> Allen & Mace, *supra* note 33, at 268. Admittedly, Allen and Mace's project was merely to develop a coherent theory that could explain the Court's self-incrimination jurisprudence.

simple synthesis of the Court's Fifth Amendment rulings seems well-suited to deal with thought-reading technology.

However, because the cognition standard is based on current Court precedent, its inadequacies are readily apparent. The term cognition in itself is potentially broad enough to protect Fourth and Fifth Amendment rights. Viewing cognition as “the acquisition, storage, retrieval, and use of knowledge,”<sup>225</sup> theoretically would prevent government use of any thought-reading technology. Reading cognition would necessarily require some form of compulsion—compulsion that could implicitly be deemed unreasonable for Fourth Amendment purposes absent other factors.<sup>226</sup> Therefore, thought-reading scans would be searches that would, at least, require a warrant supported by probable cause or an exception to the warrant requirement. Even if the government had a warrant or an exception, the Fifth Amendment would bar use of incriminating information obtained through a scan of cognition.

But cognition can also be narrowly defined, as Allen and Mace's analysis shows. Allen and Mace subtly modify what counts as cognition to reflect Court doctrine, thereby reducing its attractiveness as part of a standard.<sup>227</sup> They “use [cognition] to refer to the intellectual processes that allow one to gain and make use of substantive knowledge and to compare one's ‘inner world’ (previous knowledge) with the ‘outside world’ (including stimuli, such as questions from an interrogator).”<sup>228</sup> Further, specifically excluded from this conception of cognition are things like “simple psychological responses to stimuli such as fear, warmth, and hunger . . . and one's will or faculty for choice.”<sup>229</sup> Thus, cognition would seemingly not protect against attempts to read latent knowledge (such as an advanced form of brain fingerprinting that does not rely on presenting subjects with stimuli of any kind) or even advanced fMRI-based lie detection (because such detection would arguably monitor choices being made between telling the truth or lying).<sup>230</sup>

---

*See id.* at 248. As such, the Court is to blame for any failures of cognition theory to sufficiently protect Fourth and Fifth Amendment rights. The authors do an exceptional job synthesizing the Court's somewhat disjointed Fifth Amendment decisions. *See id.* at 277–89.

<sup>225</sup> *Id.* at 267.

<sup>226</sup> *See supra* Part II.C.1.

<sup>227</sup> Allen & Mace, *supra* note 33, at 266–67 & n.107.

<sup>228</sup> *Id.* at 267.

<sup>229</sup> *Id.*

<sup>230</sup> Allen and Mace argue, however, that the cognition standard protects “those propositions with truth-value that tend to incriminate the author.” *Id.* at 268. Of course, Allen and Mace were dealing with the Court's current rules, not proposing a standard to deal with new technology. *See id.* at 248. As such, their argument misses some key points. First, if brain fingerprinting technology matures, scans could measure latent knowledge, something that would not involve any intellectual processes but that would simply measure physical features to determine whether someone possesses knowledge. Further, thought-reading technology need not necessarily look to “propositions with truth-value.” Thought-reading could potentially look only at the processes going on in one's mind when answering a question to determine truth or falsity—i.e., the technology could simply determine when a person has chosen to use free will and lie.

Beyond an overly restrictive view of cognition, Allen and Mace's standard focuses on the idea of "compelled cognition."<sup>231</sup> Thus, it prevents only measurements of cognition in response to something done by the government.<sup>232</sup> Thus, the government could potentially scan thoughts for incriminating evidence as long as the government did not do anything to evoke those thoughts, such as posing a question.<sup>233</sup> As a result, assuming that thought-reading could be deemed reasonable for Fourth Amendment purposes, any incriminating thoughts obtained by a government brain scan executed pursuant to a warrant supported by probable cause would be permissible, as long as the government did not compel thoughts. Such a result indicates that a cognition standard fails to offer any real safeguards.

### C. Searching for Freedom of Thought with No Incrimination

In developing a standard beyond cognition to address the challenges posed by thought-reading technology to the Fourth and Fifth Amendments, the First Amendment and its implicit guarantees make a good starting point.<sup>234</sup> The First Amendment states: "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances."<sup>235</sup> Freedom of religion, freedom of speech, freedom of the press, freedom of assembly—all these rights are tied to a more fundamental right that is not explicitly included in the Constitution anywhere—freedom of thought. Freedom of thought is the necessary prerequisite to the exercise of all of the freedoms guaranteed to the people of the United States in the First Amendment.<sup>236</sup> As the Supreme Court

---

<sup>231</sup> *Id.* at 268.

<sup>232</sup> *Id.* ("It is important to note that state action is required to trigger both the cognition and the disclosure of the results. There would be nothing unconstitutional about the police compelling a suspect to think about whether he was guilty if the thoughts were never elicited or were disclosed voluntarily.").

<sup>233</sup> *Id.*

<sup>234</sup> U.S. CONST. amend. I. The First Amendment could ultimately be one of the strongest protections against the misuse of thought-reading technology. A full discussion of the First Amendment implications of thought-reading technology is beyond the scope of this Note.

<sup>235</sup> *Id.*

<sup>236</sup> *See* *Olmstead v. United States*, 277 U.S. 438, 478–79 (1928) (Brandeis, J., dissenting) (noting that the Founders "sought to protect Americans in their beliefs, their thoughts, their emotions and their sensations"). The common law at the time the Founders wrote the Constitution recognized the right to keep one's thoughts private, so the link between freedom of speech and freedom of thought is arguably embedded in the Founders' understanding of the First Amendment. *Cf.* Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193, 195, 198 (1890) (noting that advancements in human achievement necessitated development of legal recognition and protection of "[t]houghts, emotions, and sensations" and discussing the common law right to determine what thoughts to communicate or withhold).

noted, what the First Amendment fundamentally protects is the right of a citizen to “decide for himself or herself the ideas and beliefs deserving of expression, consideration, and adherence.”<sup>237</sup>

Viewing the Fourth and Fifth Amendments in light of the First Amendment’s implicit protection of thoughts is instructive. Whatever standard the Court ultimately adopts to deal with thought-reading technology should be predicated on the necessity of freedom of thought. Any standard that allows the government to engage in any technologically enhanced activity that impinges, even slightly, on the right to free thought should not be allowed. Reasonable Fourth Amendment searches should not include searches of one’s thoughts. Fifth Amendment self-incriminating testimony should include any thoughts, intentions, or physical manifestation of thoughts and intentions, read by a machine, regardless of the particular form of technology.<sup>238</sup>

These guiding principles are simply stated, straightforward, and easily translated into a broader theory that should be used as guidance in other constitutional areas. That broader theory is that the Constitution guarantees freedom from governmental use of technologies that purport to measure physical expressions of thought, regardless of how that technology functions. This broad statement necessarily flows from the freedom of thought implicit in the First Amendment, but also derives directly from principles underlying the Fourth and Fifth Amendments. The Fourth Amendment secures the people’s rights in their “persons, houses, papers, and effects, against unreasonable searches and seizures” by restricting the ability of the government to intrude on these areas.<sup>239</sup> It is a limitation on governmental power and a defense of individual liberties because it forces the government to act reasonably in its prosecution of citizens.<sup>240</sup> Given the fundamental right to freedom of thought that underlies the

---

Although the Constitution does not expressly make this link, the Universal Declaration of Human Rights does. Universal Declaration of Human Rights, G.A. Res. 217A, at 71, U.N. GAOR, 3d Sess., 1st plen. mtg., U.N. Doc A/810 (Dec. 12, 1948). Articles 18–20 deal with the same basic rights outlined by the First Amendment but include freedom of thought as the first of these necessary rights. *Id.* at arts. 18–20.

<sup>237</sup> *Turner Broad. Sys., Inc. v. FCC*, 512 U.S. 622, 641 (1994).

<sup>238</sup> Of course, the Fifth Amendment only protects against self-incrimination. U.S. CONST. amend. V. Presumably, non-incriminating thoughts read by the government would not be covered by the Fifth Amendment. But where should such a line be drawn? Allowing some thoughts to be used against a defendant because they are insufficiently incriminating opens the door for courts to review any and all thoughts read by the government. Making calls as to what is a protected, incriminating thought and what is an unprotected thought would be a messy business that is best avoided by adopting a truly bright-line rule.

<sup>239</sup> U.S. CONST. amend. IV.

<sup>240</sup> *See Olmstead*, 277 U.S. at 478–79 (Brandeis, J., dissenting) (noting that unjustified governmental intrusions on the privacy of the individual violate the Fourth Amendment); *see also* Joginder S. Dhillon & Robert I. Smith, *Defensive Information Operations and Domestic Law: Limitations on Government Investigative Techniques*, 50 A.F.L. REV. 135, 145 (2001) (noting that the Fourth Amendment limits the government’s ability to intrude

Constitution, searches of thoughts should simply never be reasonable. The Fifth Amendment also restricts potential excesses of the government in prosecuting citizens.<sup>241</sup> Although the Framers did not imagine that one day governments could have technology that would allow them to read citizens' thoughts, they knew that governments had committed reprehensible acts in extracting self-incriminating information from citizens, and they sought to prevent such practices from occurring here.<sup>242</sup> Compelling the disclosure of thoughts (incriminating or otherwise) through the use of brain scanning technology evokes the spirit of such historical excesses and should be impermissible.

The broad standard proposed here cannot completely supplant the Court's Fourth and Fifth Amendment standards as they currently stand. It is designed as a preemptive response to technology that, simply put, will fundamentally change our society.<sup>243</sup> The Court's Fourth and Fifth Amendment jurisprudence is messy at best, and scholars endeavor to offer suggestions for improvement.<sup>244</sup> As scholars and courts continue to grapple with the complexities presented by the Fourth and Fifth Amendments, they need to begin to take account of rapidly evolving, transformational technologies. Thought-reading technology may not be a reality today, but it will be soon. As Justice Brandeis noted in his dissent in *Olmstead*, "in the application of a constitution, [the Court's] contemplation cannot be only of what has been but of what may be."<sup>245</sup> Thought-reading technology "may be" surprisingly close to becoming reality. The legal community needs to be prepared to grapple with the mass of thorny issues this technology brings with it.

---

on the people's lives).

<sup>241</sup> *Pennsylvania v. Muniz*, 496 U.S. 582, 595–96 (1990) (quoting *Doe v. United States*, 487 U.S. 201, 212 (1998)).

<sup>242</sup> *Id.*

<sup>243</sup> As such, note that this proposed standard does not ban the use of sense-enhancing technology generally. Sense-enhancing technologies can potentially serve law enforcement in beneficial ways. Further, this proposed standard would not affect the ability of law enforcement to use now-routine tools such as blood tests, DNA tests, or breathalyzers, for example. See *supra* notes 151–52 and accompanying text; see also Erin Murphy, *The New Forensics: Criminal Justice, False Certainty, and the Second Generation of Scientific Evidence*, 95 CAL. L. REV. 721 (2007) (discussing the pervasiveness as well as the pitfalls of "secondary-generation" scientific evidence such as DNA testing). Only technology that is designed to probe the thoughts, feelings or minds of suspects or witnesses should be verboten. For an in depth discussion of the application of the Fourth Amendment to sense-enhanced searches, see David E. Steinberg, *Sense-Enhanced Searches and the Irrelevance of the Fourth Amendment*, 16 WM. & MARY BILL RTS. J. 465 (2007).

<sup>244</sup> See *supra* Part IV.B.

<sup>245</sup> *Olmstead*, 277 U.S. at 474 (Brandeis, J., dissenting) (quoting *Weems v. United States*, 217 U.S. 349, 373 (1910)).

*D. Beyond Governmental Uses—Final Considerations*

The legal and constitutional implications of thought-reading technology are not going to be exhausted any time soon. As a final thought, scholars should begin to address some of the following issues. First, what should be done about the inverse of the problems presented in this Note—namely, how should defendants be able to use thought-reading technology? To date, the Court has held that per se rules against the use of lie detectors do not violate defendants' Sixth Amendment rights to present a defense.<sup>246</sup> Should this holding remain intact in the context of thought-reading technology? Next, how should the legal field respond to attempts to use thought-reading technology in civil cases where the government is not directly involved in use of the technology? On a related note, what happens if the technology of the movie *Strange Days* becomes a reality? Should it make a difference under the Constitution whether a defendant recorded his thoughts and feelings as he committed a robbery? Finally, how should policy makers begin to deal with thought-reading technology? Should neuromarketing be allowed to develop in response to an apparent market demand or should the practice be banned? Amazingly, all of these questions and more are no longer merely hypotheticals—they are the reality of our future.

Orwell may have missed the mark by a few decades, but the technology that he feared would lead to unbreakable totalitarian society is now visible on the horizon. To prevent abuses of this technology and totalitarian dystopias, the legal community and society at large need to begin dealing with the implications of thought-reading technology before it becomes reality.

---

<sup>246</sup> See generally *United States v. Scheffer*, 523 U.S. 303 (1998) (holding that a defendant's right to present exculpatory evidence may be restricted by evidentiary rules that exclude evidence considered unreliable by experts).