

GUNFIRE GAME CHANGER OR BIG BROTHER'S HIDDEN EARS?: FOURTH AMENDMENT AND ADMISSIBILITY QUANDARIES RELATING TO SHOTSPOTTER TECHNOLOGY

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*This Note argues that ShotSpotter's gunfire recognition technology is constitutional and does not infringe an individual's Fourth Amendment rights when it works as advertised. Considering the evolving nature of audio sensing technologies, ShotSpotter is a valuable asset to communities through its ability to identify the location of gunshots. At the same time, this form of technology raises legitimate Fourth Amendment concerns which necessitates an improved framework to approach these issues. In addition, this Note comments on the possibility of utilizing ShotSpotter data as evidence in trial. Finally, this Note proposes that ShotSpotter data should be constitutional, but warns that evolving technology has the capacity to implicate constitutional concerns if not appropriately monitored. Using a judicial bright-line framework, that divides gunshots and ambient noise, privacy interests can be adequately protected.*

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## I. INTRODUCTION

At 12:30 AM on December 2, 2011, ShotSpotter sensors located discretely on Dartmouth Street in the South End of New Bedford, Massachusetts, detected gunshots and relayed data to ShotSpotter's review center in California.<sup>1</sup> For ShotSpotter, a technology company that identifies and triangulates gunfire through audio sensors,<sup>2</sup> this was a routine procedure, except for the fact that the technology discovered more than gun-

1. Brian Fraga, *ShotSpotter Recording of Street Argument Raises Potential Privacy Issues*, S. COAST TODAY (Jan. 11, 2012, 8:20 AM), <http://www.southcoasttoday.com/apps/pbcs.dll/article?AID=/20120111/NEWS/201110339>; see also Veronique Greenwood, *New Surveillance Program Listens for Gunshots, Get Police There in Minutes*, DISCOVER (May 30, 2012, 12:09 PM), <http://blogs.discovermagazine.com/80beats/2012/05/30/new-surveillance-program-listens-for-gunshots-get-police-there-in-minutes/>.

2. Greenwood, *supra* note 1.

shots that day. The sensors also picked up a portion of a street argument between Jonathan Flores and Jason Denison.<sup>3</sup>

Apparently, a derogatory Facebook post started the animosity.<sup>4</sup> Denison supported a woman who planned to fistfight with another woman; Flores backed the other woman.<sup>5</sup> The two men engaged in gunfire with one another and a stray bullet from Flores's gun found its way into twenty-year-old Michael Pina's head.<sup>6</sup> Pina tragically died as a result three days later.<sup>7</sup>

Denison initially denied his involvement in the altercation, but ShotSpotter data proved otherwise.<sup>8</sup> The sensors recorded what could audibly be discerned as "No, Jason! No, Jason!" and other parts of the recording were garbled.<sup>9</sup> The ShotSpotter data aligned with witness statements regarding the argument and helped the police assemble a chronology of the events that resulted in Pina's death.<sup>10</sup> Denison and Flores were both charged with Pina's murder.<sup>11</sup>

The defense counsel alleged this technology violated their clients' right of privacy via the Fourth Amendment as it is akin to a wiretap, which necessitates a warrant.<sup>12</sup> The defense counsel could have moved to suppress the evidence, alleged violations of the state wiretap law, or asserted that the recording is like an "unreasonable search" under both the Massachusetts and U.S. Constitutions.<sup>13</sup>

Conversely, the prosecution stated that it researched possible constitutional concerns but found none.<sup>14</sup> Moreover, counsel argued that

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3. Fraga, *supra* note 1; *see also* Erica Goode, *Shots Fired, Pinpointed and Argued Over*, N.Y. TIMES, May 28, 2012, [http://www.nytimes.com/2012/05/29/us/shots-heard-pinpointed-and-argued-over.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2012/05/29/us/shots-heard-pinpointed-and-argued-over.html?pagewanted=all&_r=0); Greenwood, *supra* note 1.

4. Brian Fraga, *Facebook Post Sparked New Bedford Fight That Ended in Deadly Shooting*, S. COAST TODAY (Jan. 7, 2012, 6:48 AM), <http://www.southcoasttoday.com/article/20120107/News/201070327> [hereinafter FRAGA FACEBOOK POST].

5. Globe Staff, *Two Charged with Killing New Bedford Man During Gunfight Last Month*, THE BOS. GLOBE (Jan. 5, 2012), <http://www.bostonglobe.com/metro/2012/01/05/two-charged-with-killing-new-bedford-man-during-gunfight-last-month/zEMRYhDAWA3sbvRAI6yqjJ/story.html>; *see also* Greenwood, *supra* note 1.

6. Globe Staff, *supra* note 5.

7. *Id.*

8. Fraga, *supra* note 1.

9. *DHS Run Police Departments Are Using 'ShotSpotter' To Spy On Public Conversations*, BLACKLISTED NEWS (Jan. 14, 2015), [http://www.blacklistednews.com/DHS\\_run\\_police\\_departments\\_are\\_using\\_'ShotSpotter'\\_to\\_spy\\_on\\_public\\_conversations/40880/0/38/38/Y/M.html](http://www.blacklistednews.com/DHS_run_police_departments_are_using_'ShotSpotter'_to_spy_on_public_conversations/40880/0/38/38/Y/M.html) [hereinafter DHS].

10. Fraga, *supra* note 1.

11. FRAGA FACEBOOK POST, *supra* note 4. Another example comes from Oakland, California where Tyrone Lyles's dying words were, "Why you done me like that R? R, why you do me like that dude?" Cale Guthrie Weissman, *The NYPD's Newest Technology may be Recording Conversations*, BUS. INSIDER (Mar. 26, 2015, 1:05 PM), <http://www.businessinsider.com/the-nypds-newest-technology-may-be-recording-conversations-2015-3>. ShotSpotter picked up those words and forwarded the conversation to the authorities who used the conversation as evidence to convict Arlton Johnson of first-degree murder. *Id.* "The Northern California city alone has used the sensors' recordings of human voices as evidence twice." *Id.*

12. Fraga, *supra* note 1.

13. *Id.*

14. *Id.*

there is no reasonable expectation of privacy when individuals yell at each other in a public place,<sup>15</sup> and therefore the evidence should be admissible.<sup>16</sup> Nevertheless, even if defense counsel conceded that there was no reasonable expectation of privacy in this murder, the fact that technology purportedly used solely for gunfire detection also recorded a human conversation uncovers a whole new can of constitutional privacy worms.<sup>17</sup>

ShotSpotter spokespeople promised that the sensors were made to activate solely when they identified loud sounds “with the acoustic signature of a gunshot.”<sup>18</sup> ShotSpotter pronounced that this conversation recording was a rare occasion; the sensors were not lurking at every corner listening to citizens.<sup>19</sup> Police also assured citizens that the technology does not violate the Constitution.<sup>20</sup> They appeared to imply that ShotSpotter’s efficiency and gunfire prevention results outweigh any privacy concerns.<sup>21</sup>

ShotSpotter was designed to deter crime and assist local police forces in apprehending suspects while saving victims’ lives in mere seconds.<sup>22</sup> Michael Pina was not the first, and most certainly will not be the last, victim of gunfire in this country. The simple fact is gunfire, whether reported or not, has become an ordinary facet of human life in America and elsewhere around the world. In the past year, for example, ShotSpotter sensors caught over 61,000 gunshots worldwide.<sup>23</sup> ShotSpotter advertises that its technology has resulted in sixty to ninety percent decreases in gunfire in areas where the sensors are located.<sup>24</sup> While these statistics are

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15. *Id.*

16. DHS, *supra* note 9.

17. Fraga, *supra* note 1.

18. *Id.*

19. *Id.* “The entire system is internally designed not to allow ‘live listening’ of any sort,’ the company writes in its privacy policy. And when the devices do transmit live audio the recordings only last a few seconds. This does not constitute surveillance, in its eyes.” Weissman, *supra* note 11. “[There were] people shouting just before or just after a felony.’ And these cases, [CEO Clark] emphasized, have happened fewer than five times out of the millions of impulses that ShotSpotter’s sensors have picked up in the last 20 years.” *Id.* Yet, ShotSpotter recorded just enough to assist authorities to identify suspects. *Id.*

20. *Id.*

21. *Id.*

22. Andras Petho et al., *ShotSpotter Detection System Documents 39,000 Shooting Incidents in the District*, WASH. POST (Nov. 2, 2013), [http://www.washingtonpost.com/investigations/shotspotter-detection-system-documents-39000-shooting-incidents-in-the-district/2013/11/02/055f8e9c-2ab1-11e3-8ade-af23cda135e\\_story.html](http://www.washingtonpost.com/investigations/shotspotter-detection-system-documents-39000-shooting-incidents-in-the-district/2013/11/02/055f8e9c-2ab1-11e3-8ade-af23cda135e_story.html); *ShotSpotter: New Weapon Against Gun Violence*, in 25 NO. 3 QUINLAN, LAW ENFORCEMENT EMPLOYMENT BULLETIN art. 9, TECH. NEWS (Mar. 2008) [hereinafter *ShotSpotter New Weapon*].

23. Dr. Bob Showen, *The Intelligence Which Scientific Analysis Can Derive from Gunshot Audio*, SHOTSPOTTER BLOG (Aug. 27, 2014), <http://www.shotspotter.com/blog/the-intelligence-which-scientific-analysis-can-derive-from-gunshot-audio>.

24. *ShotSpotter New Weapon*, *supra* note 22. *But see Technology Credited for Lower D.C. Murder Rate*, in 8 NO. 3 QUINLAN, COMPUTER CRIME AND TECHNOLOGY IN LAW ENFORCEMENT art. 9, NEWS WEB (“Not all technology investments are working, however. A 2011 study by the Urban Institute concluded the city’s more than 70 neighborhood crime cameras do not have a measurable effect on crime.”).

staggering, some people are holding their breath due to previously indicated privacy concerns.

Civil liberty lawyers acknowledged that the technology and its recording abilities might present itself before the state or the U.S. Supreme Court due to the delicate nature of privacy concerns.<sup>25</sup> ShotSpotter's deceiving abilities also provide fodder as another situation where "emerging technologies can pose challenges to enforcing the law while also protecting civil liberties."<sup>26</sup> This Note asserts that if ShotSpotter worked as advertised, then the technology would seem intrusive but not unconstitutional.<sup>27</sup> Sadly, instances similar to that in Pina's murder indicate that the gunfire game changer can do much, much more.

This Note dissects the utilization and constitutionality of ShotSpotter technology. Part II begins with a functional overview of ShotSpotter and then turns to significant Fourth Amendment case law such as *Katz*, *Kyllo*, and *Jones*. This Note addresses future ShotSpotter concerns relating to federal and state statutory schemes. Part III analyzes ShotSpotter under the Fourth Amendment frameworks and identifies problems with those approaches. This Note also comments on corollary concerns about admissibility in trial and the relevant steps a party would need to take to get the data into evidence. Following this analysis, Part IV of this Note opines that at this juncture ShotSpotter data regarding gunfire should be deemed constitutional, but warns that the outcome may change as more incidents such as Pina's murder unfurl. This Note proposes a judicial bright-line framework, dividing gunshots and ambient noise, which should adequately protect privacy interests while recognizing ShotSpotter's inherent public benefit. This Note also recommends possible legislative and educational avenues and recommends a solution for trial admissibility based on the bright-line framework. Part V provides concluding remarks.

The U.S. Supreme Court has yet to address ShotSpotter, although the revolutionary technology has been used in countless investigations and trials. As courts begin to ascend into these murky waters, it is imperative that judges acknowledge ShotSpotter as a critical crime-fighting tool, but with serious privacy repercussions if the technology is not reigned in through appropriate measures.

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25. Fraga, *supra* note 1.

26. *Id.*

27. The Denver Post Editorial Board, *ShotSpotter is an Appropriate Tool for Police Surveillance*, THE DENVER POST (Jan. 12, 2015, 9:40 AM), [http://www.denverpost.com/editorials/ci\\_27292034/shotspotter-is-an-appropriate-tool-police-surveillance](http://www.denverpost.com/editorials/ci_27292034/shotspotter-is-an-appropriate-tool-police-surveillance) [hereinafter *ShotSpotter is an Appropriate Tool*].

## II. BACKGROUND

### A. *ShotSpotter Overview and How It Works*

ShotSpotter, headquartered in Newark, California, entered the acoustic gunshot location technology market in 1996<sup>28</sup> as engineer Dr. Robert Showen's brainchild.<sup>29</sup> He saw a need for this technology due to his experiences in 1992 in East Palo Alto, California, the city with the then-highest homicide rate per capita in the United States.<sup>30</sup> Current President and CEO Ralph A. Clark manages the company, now known as SST.<sup>31</sup>

ShotSpotter's first trial run occurred in Redwood City, California, in 1997, followed by Washington D.C. in 2006, Bellwood, Illinois, and Boston, Massachusetts in 2007, to name a few major clients.<sup>32</sup> As of November 2013, Washington D.C. is ShotSpotter's largest client.<sup>33</sup> Currently, ShotSpotter spans over eighty locations, with over 275 square miles across the United States and continues to build an international presence.<sup>34</sup> Beginning in 2015, police presently use ShotSpotter in twenty-two states in the United States.<sup>35</sup> ShotSpotter does not lie in wait at each intersection of the listed client cities; the sensors are deployed in specific locations.<sup>36</sup> ShotSpotter "want[s] to be where the problem is."<sup>37</sup> There-

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28. *Company*, SHOTSPOTTER GUNSHOT DETECTION AND LOCATION SERVICE, <http://www.shotspotter.com/company> (last visited Oct. 26, 2015) [hereinafter SHOTSPOTTER].

29. Rachel Shafer, *To Catch a Speeding Bullet*, BERKELEY ENGINEERING (Aug. 18, 2011), <http://engineering.berkeley.edu/2011/08/catch-speeding-bullet>.

30. *Id.*

31. SHOTSPOTTER, *supra* note 28.

32. *Id.* Domestic ShotSpotter clients must sign a fairly lengthy Service and License Agreement whereby ShotSpotter owns the right to the data the sensors triangulate and they may transmit the data to third parties unless the city shells out money for an "exclusivity option." Rebelwill777, *Shots Potter Service and License Agreement 2011*, SCRIBD. (Aug. 11, 2011), <http://www.scribd.com/doc/62124362/Shots-Potter-Service-and-License-Agreement-2011#scribd> [hereinafter *Service and License Agreement 2011*].

33. Petho, *supra* note 22. Other authorities have also backed the technology in this area. Mark Kurlyandchik, *How ShotSpotter and New Technologies Help Police Fight Crime*, HOUR DETROIT (May 31, 2011), <http://www.hourdetroit.com/Hour-Detroit/June-2011/How-ShotSpotter-Facebook-and-Technology-Help-Police-Fight-Crime/> ("[ShotSpotter] has some [Department of Defense] certifications from a Homeland Security standpoint, to where the technology is recognized by the federal government, and it's going to be a significant infrastructure in Washington, D.C.' . . .").

34. SHOTSPOTTER, *supra* note 28. ShotSpotter expanded its coverage to six more cities in the latter half of 2014 to include major metro hubs like Denver and Detroit while older clients such as Minneapolis and Oakland broadened their coverage. Press Release, ShotSpotter Adds Six New Cities in Second Half 2014; Now in More Than 90 Cities (Jan. 28, 2015), available at <http://www.shotspotter.com/press-releases/article/shotspotter-adds-six-new-cities-in-second-half-2014-now-in-more-than-90-cit> [hereinafter *ShotSpotter Adds*].

35. Chris Oberholtz, *Crime-Sensing Microphones Hear, Locate Gunshots*, KAIT8 (Feb. 12, 2015, 7:45 AM), <http://www.kait8.com/story/27836170/crime-sensing-microphones-hear-locate-gunshots>.

36. Lauren C. Williams, *Beyond Body Cams: Emerging Technologies That Could Help Make Police More Accountable*, THINKPROGRESS (Dec. 3, 2014, 4:18 PM), <http://thinkprogress.org/justice/2014/12/03/3598722/technology-police-accountability/>.

37. *Id.*

fore, cities deploy the sensors sparingly in locations like Chicago and cover roughly one-fifth of Washington, D.C., for example.<sup>38</sup>

ShotSpotter currently produces ShotSpotter Flex, ShotSpotter SiteSecure, and SecureCampus.<sup>39</sup> ShotSpotter possesses the most impressive collection of urban gunfire data in the world, which includes over 500,000 reports.<sup>40</sup> ShotSpotter's unofficial mission states that they see themselves as "a company that strives for perfection and are passionate about helping make a real difference in the public safety posture of many underserved communities while being commercially viable."<sup>41</sup> ShotSpotter illustrates this passion through their technological innovation. For example, ShotSpotter currently holds the most patents in the acoustic gunshot location technology industry with thirty-two patents and counting.<sup>42</sup> Additionally, the Silicon Valley Intellectual Property Law Association named Dr. Showen the "Inventor of the Year" in 2014.<sup>43</sup>

The system employs a completely "agnostic" method in that it does not distinguish civilian or criminal gunfire.<sup>44</sup> ShotSpotter uses "acoustic triangulation," whereby the system records sound waves at minimally two locations.<sup>45</sup> The technology's formula consists of assessing the speed of the sound detected and the decibel level to determine the location.<sup>46</sup> ShotSpotter scatters sensors discretely in specific locations to triangulate<sup>47</sup> gunshots and then convey that information to the local law enforcement within seconds.<sup>48</sup> The sound conveyed, which looks like a "vertically spliced Christmas tree," is called an "acoustic fingerprint."<sup>49</sup> The technology filters out other noises that may be mistaken for gunfire, such as a car backfiring.<sup>50</sup>

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38. *Id.*

39. SHOTSPOTTER, *supra* note 28.

40. *Id.*

41. ShotSpotter, Response, *One Thought on ShotSpotter Makes Up Its Gunfire Data, But It Still Doesn't Make Any Sense*, SEATTLE PRIVACY COALITION (Nov. 26, 2014, 3:19 PM), <https://www.seattleprivacy.org/shotspotter-makes-up-its-gunfire-data-but-it-still-doesnt-make-any-sense/#comments> [hereinafter ShotSpotter Response].

42. Showen, *supra* note 23.

43. Press Release, ShotSpotter Founder & Chief Scientist Bob Showen Named "Inventor of The Year" by SVIPLA (Dec. 3, 2014), *available at* <http://www.shotspotter.com/press-releases/article/shotspotter-founder-chief-scientist-bob-showen-named-inventor-of-the-year-b>.

44. Williams, *supra* note 36 ("We've captured events where bad guys are shooting at each other and those where an officer is involved . . ."). According to CEO Ralph Clark, recorded cop shootings are not a common occurrence. *Id.*

45. *ShotSpotter New Weapon*, *supra* note 22. For an interesting and informative analysis of the ShotSpotter triangulation see Showen, *supra* note 23.

46. Kurlyandchik, *supra* note 33.

47. Triangulation occurs when several sensors all detect the same audio to hone in on the specific location.

48. Jorge Martinez, Note, *Major League Security: Overcoming Legal Challenges of Sporting Event Security Systems*, 2 U. MIAMI NAT'L SECURITY & ARMED CONFLICT L. REV. 197, 204 (2012).

49. Cara Buckley, *High-Tech 'Ears' Listen for Shots*, N.Y. TIMES, Nov. 20, 2009, <http://www.nytimes.com/2009/11/22/nyregion/22shot.html>.

50. *Calling the Shots: How Gunshot-Detecting Microphones Help Police Curb Crime*, ECONOMIST, (Sept. 13, 2014), <http://www.economist.com/news/united-states/21617018-how-gunshot-detecting-microphones-help-police-curb-crime-calling-shots> [hereinafter *Calling the Shots*]. The technology also filters out sounds like car doors and trains. See THOMAS N. MCINNIS, THE EVOLUTION OF

The sensors are “[r]oughly the size of a medium pizza and designed to look like a rooftop fan [and] each sensor contains up to four small microphones”<sup>51</sup> encased in a waterproof exterior.<sup>52</sup> The concealed sensors sit atop buildings and utility poles, and, importantly, to prevent vandalism, their locations remain undisclosed.<sup>53</sup> Some cities and law enforcement believe that the success of the technology is partially dependent on the fact that the sensor coordinates remain top-secret, although some cities do publicize the technology in general.<sup>54</sup>

ShotSpotter heralds its accuracy within eighty feet of where the gunfire occurred and is usually more accurate than that.<sup>55</sup> While ShotSpotter guarantees that “coverage zones” will record at least eighty percent of all “audible, outdoor gunfire,” spokespeople brag that the results generally indicate upwards of ninety-five percent.<sup>56</sup> This accuracy stems, in part, from an intensive, yet rapid review process at the SST Real-Time Incident Review Center (“IRC”)<sup>57</sup> immediately after the sensors detect gunfire. The average personnel review and classification of a gunshot “acoustic fingerprint” takes about forty seconds; once verified, the Center relays the data, with additional “situational information,” to the local police.<sup>58</sup>

Police praise the technology due to its ability to “get the cop to the dot.”<sup>59</sup> Officers can use a program on their laptops or smart phones called Alert Console to receive a “bird’s-eye view of the area, marking the location of the incident with a red dot and indicating the time and number of rounds fired.”<sup>60</sup> The technology can even determine the speed and direction of a shooter in a drive-by incident<sup>61</sup> or analyze the “shooter’s intent.”<sup>62</sup>

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THE FOURTH AMENDMENT 264 (Lexington Books ed. 2009). *But see* Buckley, *supra* note 49 (explaining that the system has confused various loud urban noises for gunshots).

51. Ethan Watters, *ShotSpotter*, WIRED (Mar. 2007), <http://archive.wired.com/wired/archive/15.04/shotspotter.html>.

52. George Hunter, *Detroit Police Test Gunshot Tracker*, THE DETROIT NEWS (Sept. 28, 2014, 11:27 PM), <http://www.detroitnews.com/story/news/local/metro-detroit/2014/09/28/detroit-police-test-gunshot-tracker/16409807/>.

53. Brian Freskos, *Police Chief Details Gunfire Location System*, STAR NEWS ONLINE (Feb. 21, 2012, 9:00 PM), <http://www.starnews.com/article/20120221/ARTICLES/120229925?tc=ar>. Police do not want criminals to know how or where law enforcement is using the technology. *See* Hunter, *supra* note 52.

54. Kurlyandchik, *supra* note 33.

55. Buckley, *supra* note 49. When ShotSpotter first entered the market it was “so clumsy that a slamming Dumpster lid would trigger the sensors . . . [and] could locate gunshots only 45 percent of the time . . .” Kurlyandchik, *supra* note 33.

56. Petho et al., *supra* note 22.

57. SHOTSPOTTER, 2013 NATIONAL GUNFIRE INDEX, available at <http://shotspotter.com/system/content/uploads/2013-NatGunfireIndex.pdf> [hereinafter NATIONAL GUNFIRE INDEX 2013].

58. Petho et al., *supra* note 22 (“ShotSpotter officials call this ‘get the cop to the dot.’”).

59. *Id.*

60. Shafer, *supra* note 29; *see also* Buckley, *supra* note 49.

61. Shafer, *supra* note 29.

62. Andy Hoag, *Judge Allows ShotSpotter Evidence in Saginaw Murder Trial, Allows Defense to Argue Against It*, MLIVE.COM (Jan. 24, 2012, 4:37 PM), [http://www.mlive.com/news/saginaw/index.ssf/2012/01/judge\\_allows\\_shotspotter\\_evide.html](http://www.mlive.com/news/saginaw/index.ssf/2012/01/judge_allows_shotspotter_evide.html) [hereinafter *Saginaw Murder Trial*]. ShotSpotter analyzes intent through the research findings that “Shooters act with the intent to kill as many people [as]

ShotSpotter data can also affect self-defense claims, which may be a highlighted future purpose of the technology.<sup>63</sup> For example, ShotSpotter data supported an innocent off-duty police officer's self-defense claim when he was not the first person to fire a gun and kill a fourteen-year-old boy in Washington D.C. in 2007.<sup>64</sup> ShotSpotter can also contradict witness statements that police officers shot first,<sup>65</sup> which is a contemporary media focus in light of situations like Ferguson, Missouri in 2014.<sup>66</sup> ShotSpotter may in fact be a less controversial alternative that still reinforces police accountability when compared to other proposed methods, such as police body cameras.<sup>67</sup>

While many acknowledge ShotSpotter as the trailblazer in the "acoustic gunshot tracking" industry, other competitors emerged such as Sentri and Boomerang.<sup>68</sup> These competitors, however, serve smaller areas or overseas armed forces operations, respectively.<sup>69</sup> And unlike these competitors, ShotSpotter consistently appears on the forefront of innovation with products such as SecureCampus, which responds to the increased gun violence on school campuses.<sup>70</sup> Now, ShotSpotter boasts investors such as Motorola Solutions and partners like AT&T,<sup>71</sup> indicating the once infantile technology blossomed into a verifiable crime-fighting weapon—but at what price?

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possible in the quickest possible manner." *Active Shooter Scenario: Gunfire Alert and Detection Response*, SHOTSPOTTER 2 (Sept. 2014), available at <http://www.shotspotter.com/system/content/uploads/mediakit/Active-Shooter-Scenario.pdf>. ShotSpotter has not provided additional information as to how they assess shooter intent.

63. NICK SELBY ET AL., SHOTSPOTTER GUNSHOT LOCATION SYSTEM EFFICACY STUDY 19–20 (CSG Analysis 2011), available at [http://csganalysis.files.wordpress.com/2011/08/shotspotter\\_efficacy\\_study\\_gls8\\_45p\\_let\\_2011-07-08\\_en.pdf](http://csganalysis.files.wordpress.com/2011/08/shotspotter_efficacy_study_gls8_45p_let_2011-07-08_en.pdf) [hereinafter EFFICACY STUDY].

64. *Calling the Shots*, *supra* note 50; see Cheryl W. Thompson, *DeOnte Rawlings Civil Suit Over Fatal Shooting is Settled*, WASH. POST (Nov. 11, 2011), [http://www.washingtonpost.com/local/deonte-rawlings-civil-suit-over-fatal-shooting-is-settled/2011/11/02/gIQANcMbCN\\_story.html](http://www.washingtonpost.com/local/deonte-rawlings-civil-suit-over-fatal-shooting-is-settled/2011/11/02/gIQANcMbCN_story.html).

65. Watters, *supra* note 51 ("ShotSpotter doesn't just lead to arrests. In several police shoot-outs, the technology has been used to contradict witness testimony that cops fired first. In other cases, alerts have led police to victims who likely would have perished without prompt attention.")

66. Interestingly, St. Louis has utilized ShotSpotter since 2008 but sensors were too far away from the shooting to pick up the audio signature. Dan Keating, *Acoustic Experts Detail Purported Ferguson Shooting*, WASH. POST (Sept. 2, 2014), <http://www.washingtonpost.com/news/post-nation/wp/2014/09/02/acoustic-experts-detail-purported-ferguson-shooting/>. ShotSpotter reviewed other audio from the Ferguson shots but was not able to determine the recording's authenticity. *Id.*

67. Williams, *supra* note 36.

68. Buckley, *supra* note 49. Some critics, however, believe competing systems are better. *OPD ShotSpotter Contract Extension and System Expansion*, INDY BAY: EAST BAY (Nov. 3, 2014, 3:51 PM), <https://www.indybay.org/newsitems/2014/11/03/18763754.php> [hereinafter *OPD ShotSpotter*].

69. Buckley, *supra* note 49.

70. SHOTSPOTTER, *supra* note 28.

71. *Id.*; see also Alex Knapp, *ShotSpotter Lets Police Pinpoint Exactly Where a Gun Was Fired*, FORBES (June 28, 2013, 6:00 PM), <http://www.forbes.com/sites/alexknapp/2013/06/28/shotspotter-lets-police-pinpoint-exactly-where-a-gun-was-fired/> (stating that ShotSpotter earned \$62 million from investors). ShotSpotter investors contributed \$10 million recently to the technology. Faith Merino, *ShotSpotter Gets \$10M to Locate Gunfire*, VATORNEWS (June 16, 2011), <http://vator.tv/news/2011-06-16-shotspotter-gets-10m-to-locate-gunfire>.

### B. Financial Costs Associated With ShotSpotter

Like most useful modern technology, ShotSpotter costs a pretty penny. With a price tag beginning at \$40,000<sup>72</sup> per square mile and an average of \$200,000 for a one-year contract,<sup>73</sup> cities will likely run into financial obstacles obtaining and maintaining the technology.<sup>74</sup> Presently, ShotSpotter advertises yearly subscription plans, one named ShotSpotter Flex, a “cloud-based solution,” for \$40,000 to \$60,000 per square mile.<sup>75</sup> Additionally, this option includes round-the-clock monitoring through the Mountain View, California, review center.<sup>76</sup>

Generally, taxpayer money supports the technology.<sup>77</sup> Some cities, however, use a variety of alternative methods ranging from federal authorities,<sup>78</sup> police funds,<sup>79</sup> casino funds,<sup>80</sup> funding consultants, and federal grants<sup>81</sup> to relying on “drug forfeitures and other property seized by police.”<sup>82</sup> In Chicago, for example, “criminals pay to monitor themselves, as money forfeited by offenders is used to pay for such locator systems.”<sup>83</sup>

Some cities are not as enchanted with the technology from a budgetary perspective. For example, in Detroit, Michigan, the City Council refused to approve a proposal for a three-year contract that would have cost the city \$2.6 million.<sup>84</sup> Oakland, California police officers also seem to harbor doubts, even though the citizens feel safer knowing the sensors

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72. Heather Kelly, *Police Embracing Tech That Predicts Crimes*, CNN (May 26, 2014, 2:08 PM), <http://www.cnn.com/2012/07/09/tech/innovation/police-tech/index.html?iref=allsearch>.

73. *Chicago Resumes ShotSpotter Use After Dramatic Technology Improvement*, THE CRIME REP. (Oct. 26, 2012, 7:52 AM), <http://www.thecrimereport.org/news/crime-and-justice-news/2012-10-shotspotter-now-ok-in-chicago> [hereinafter *Chicago Resumes ShotSpotter*].

74. For example, Detroit may face upwards of \$3 million to install ShotSpotter sensors, and the money will come from “federal-forfeiture funds and . . . [a] grant from the U.S. Justice Department.” Kurlyandchik, *supra* note 33.

75. SHOTSPOTTER, *supra* note 28. ShotSpotter claims Flex is an “affordable” subscription, partly because “city agencies no longer have to fund the purchase of expensive capital equipment or maintain the equipment after installation.” *ShotSpotter Adds*, *supra* note 34. Moreover, “[w]ith ShotSpotter Flex police now possess a scientific barometer of success since smart policing leads to fewer shootings.” *Id.*

76. Goode, *supra* note 3; *see also* Greenwood, *supra* note 1.

77. Buckley, *supra* note 49.

78. *See* OFFICE OF UNDER SEC’Y OF DEF. ACQUISITION, TECH. & LOGISTICS INDUS. POLICY, ANNUAL INDUSTRIAL CAPABILITIES REPORT TO CONGRESS 11 (May 2010), *available at* [http://www.acq.osd.mil/mibp/docs/annual\\_ind\\_cap\\_rpt\\_to\\_congress-2010.pdf](http://www.acq.osd.mil/mibp/docs/annual_ind_cap_rpt_to_congress-2010.pdf).

79. Allison Klein, *District Adding Gunfire Sensors*, WASH. POST (July 5, 2008), <http://www.washingtonpost.com/wp-dyn/content/article/2008/07/04/AR2008070402356.html>.

80. John Martin, *City Council Appears Divided on ‘ShotSpotter’ Program*, EVANSVILLE COURIER & PRESS (Aug. 23, 2014), <http://www.courierpress.com/news/crime/city-council-appears-divided-on-shotspotter-program-ep-570826905-325557631.html>.

81. *Law Enforcement: Funding*, SHOTSPOTTER GUNSHOT DETECTION AND LOCATION SERVICE, <http://www.shotspotter.com/funding> (last visited Oct. 28, 2015); *see* Petho et al., *supra* note 22 (“A federal grant paid \$2 million to place sensors across the 7th Police District in Southeast Washington.”).

82. *Chicago Resumes ShotSpotter*, *supra* note 73.

83. Fernicia Patrick & Dr. Tod W. Burke, *Gunshot Sensor Technology: Can You Hear Me Now?*, POLICE & SECURITY NEWS, May-June 2007, at 3, *available at* [http://www.levp.com/cat-bin/filexfer/show/07-2007PSN-GunShotSensors.pdf?artist\\_id=365&folder=news\\_attachments&file=07-2007PSN-GunShotSensors.pdf](http://www.levp.com/cat-bin/filexfer/show/07-2007PSN-GunShotSensors.pdf?artist_id=365&folder=news_attachments&file=07-2007PSN-GunShotSensors.pdf).

84. Goode, *supra* note 3.

are around.<sup>85</sup> They believe the system costs too much, given that the money could go to other purposes, and is unnecessary as they already receive alerts from citizens.<sup>86</sup> ShotSpotter's numerous functions, however, present enticing rationales to bite the bullet.

### C. ShotSpotter Functions

ShotSpotter provides numerous functions relating to gunfire prevention and apprehension. First, the technology serves a deterrent function by triggering a "common-knowledge effect."<sup>87</sup> This means that potential criminals are aware the technology is present and listening, although they may not know the precise location, and therefore they are more likely to abstain from shooting.<sup>88</sup> In fact, most clients report an overall decrease in gunfire occurrences after installing the technology.<sup>89</sup>

Second, ShotSpotter's unparalleled accuracy functions to pinpoint crime scenes that can better lead to criminal apprehension while saving victims' lives.<sup>90</sup> A 2006 study conducted by the National Institute of Justice revealed that "ShotSpotter correctly detected 99.6 percent of 234 gunshots at 23 firing locations" and that it "located 90.9 percent of the shots to within 40 feet."<sup>91</sup> This precision also increases officer safety, as officers are more knowledgeable about the situations they are about to encounter.<sup>92</sup>

Third, ShotSpotter's information-gathering function cannot be ignored. ShotSpotter provides crucial information to police officers about what to anticipate at each crime scene, such as "whether a gun was fired from a car and if so, how fast and in what direction the car was traveling"<sup>93</sup> and how many guns were used or if the shooter was moving while shooting.<sup>94</sup> Thus, police officers do not have to waste time searching for evidence and verification of a shooting.<sup>95</sup> This exactitude is unprecedented compared to information conveyed through ordinary 9-1-1 calls.<sup>96</sup> Additionally, ShotSpotter information can aid in determining crime trends, including "drug markets and gang battles,"<sup>97</sup> and the prevalence of gun

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85. Will Kane, *Oakland Cops Aim to Scrap Gunfire-Detecting ShotSpotter*, SFGATE (Mar. 14, 2014, 8:37 AM), <http://www.sfgate.com/crime/article/Oakland-cops-aim-to-scrap-gunfire-detecting-5316060.php>.

86. *Id.*

87. Martinez, *supra* note 48, at 204. In fact, in some cities deterrence has been the "biggest achievement." Kurlyandchik, *supra* note 33.

88. Watters, *supra* note 51.

89. EFFICACY STUDY, *supra* note 63, at 14.

90. *But see OPD ShotSpotter*, *supra* note 68 ("Shot[S]potter is one of those things that is 'sold' to an unsuspecting public as a 'public safety' item.").

91. Goode, *supra* note 3.

92. NATIONAL GUNFIRE INDEX 2013, *supra* note 57, at 5.

93. Goode, *supra* note 3.

94. *Calling the Shots*, *supra* note 50.

95. *Id.*

96. Goode, *supra* note 3.

97. Knapp, *supra* note 71.

violence in the communities in which it is used.<sup>98</sup> For example, in 2013, ShotSpotter rolled out the first annual issue of the National Gunfire Index, where the company analyzes their yearly findings and gunfire trends across the nation.<sup>99</sup>

Fourth, ShotSpotter promotes community awareness and trust. Some police departments believe ShotSpotter can “build up neighborhoods.”<sup>100</sup> The technology can be used with Dialogic Communicator, an automated telephone system, to call every provided number in the specific area and record messages asking, “shots have been fired in your neighborhood. Have you heard anything?”<sup>101</sup> Alternatively, ShotSpotter enables the police to catch perpetrators without people fearing they are “snitching” on their neighbors.<sup>102</sup> Some police departments opine that ShotSpotter data actually increases trust between citizens and their local police.<sup>103</sup>

Fifth, ShotSpotter highlights just how prevalent unreported gunfire is on city streets.<sup>104</sup> Residents in certain areas, like East Oakland, California, complained that they were tired of calling 9-1-1 to report gunfire, as it is so commonplace.<sup>105</sup> In fact, communities that frequently experience gunfire are the least likely to report gunshots to the police.<sup>106</sup> ShotSpotter data outnumbers “officially reported felony gun crimes by more than 2 to 1.”<sup>107</sup>

Sixth, ShotSpotter leads to a more proactive and effective use of police resources. The sad reality is most police forces cannot respond to most gunshot calls because they do not have the resources to do so.<sup>108</sup> ShotSpotter changes this obstacle and has been dubbed “a force multiplier” because it assists police departments by helping them use their meager resources more strategically and efficiently.<sup>109</sup> Critics note, how-

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98. Petho et al., *supra* note 22.

99. NATIONAL GUNFIRE INDEX 2013, *supra* note 57.

100. Knapp, *supra* note 71.

101. Christopher Benjamin, Note, *Shot Spotter and FaceIt: The Tools of Mass Monitoring*, 6 UCLA J.L. & TECH. 2, 6 (2002), available at [http://www.lawtechjournal.com/articles/2002/02\\_020421\\_benjamin.pdf](http://www.lawtechjournal.com/articles/2002/02_020421_benjamin.pdf).

102. Knapp, *supra* note 71.

103. *Calling the Shots*, *supra* note 50; Shafer, *supra* note 29 (“More people are willing to cooperate with us if we respond to the right location quickly. It helps buoy our relationship with the community.”).

104. Goode, *supra* note 3.

105. Kane, *supra* note 85.

106. Goode, *supra* note 3 (“In the Bayview-Hunter’s Point neighborhood of San Francisco, for example, where one square mile is covered by ShotSpotter sensors, only 10 percent of the verified incidents of gunfire detected by the system were accompanied by 911 calls . . . .”); *Law Enforcement: Overview*, SHOTSPOTTER GUNSHOT DETECTION AND LOCATION SERVICE, <http://shotspotter.com/law-enforcement> (last visited Oct. 28, 2015) (“With fewer than 1 in 5 shooting incidents reported to 9-1-1, gun crime is vastly underreported.”).

107. Petho et al., *supra* note 22.

108. *Calling the Shots*, *supra* note 50.

109. *Law Enforcement: Overview*, *supra* note 106. Not all police departments are enchanted by ShotSpotter, however, and they still question if the technology is the right avenue to pursue. To read a different account see Becky Bereiter, *Concerns Growing Over CMPD’s ShotSpotter System*, TIME WARNER CABLE NEWS CHARLOTTE (Feb. 5, 2015, 6:02 PM), <http://www.twcnews.com/nc/>

ever, that relying too much on technology in lieu of ordinary police work can also be dangerous.<sup>110</sup>

Yet, ShotSpotter enables police to communicate quickly with the correct witnesses instead of engaging in a wild goose chase.<sup>111</sup> The technology can verify 9-1-1 calls and decrease life-threatening emergency trips, which will also increase police safety as well as conserving resources.<sup>112</sup> ShotSpotter sensors can store audio data so law enforcement officials, or a court system, can review the data at a later time as well.<sup>113</sup>

Additionally, some cities—including East Orange, New Jersey,<sup>114</sup> Washington, D.C.,<sup>115</sup> and Boston<sup>116</sup>—combine ShotSpotter with an extensive video surveillance network to provide better information in the aftermath of an incident.<sup>117</sup> For example, in Saginaw, Michigan, the cameras nearby will also send video footage from the location to the police before they arrive on the scene.<sup>118</sup> These video surveillance additions, however, may add further civil liberties red flags.<sup>119</sup>

Finally, ShotSpotter technology increases the confiscation of illegal firearms.<sup>120</sup> These functions together illustrate the power, precision, and utility of the ShotSpotter technology and how it is a secret talisman in the hands of local police forces to combat the deadly gunfire that plagues American streets.

#### D. Technical Problems with ShotSpotter

As predicted, the ShotSpotter technology is not perfect; sometimes the sensors misidentify or simply fail to discover a gunshot. These instances are rare, however, as the technology has improved over time.<sup>121</sup> When ShotSpotter fails to identify a shooting the company engages in “a

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charlotte/news/2015/02/5/concerns-growing-over-cmpd-s-shotspotter-system.html. Some critics believe ShotSpotter is a cheap alternative. See also *OPD ShotSpotter*, *supra* note 68 (“ShotSpotter is . . . [a] cheap way of overcoming a supposed shortfall in police staffing. It’s really about surveillance.”).

110. See Kurlyandchik, *supra* note 33.

111. Alex Olesker, *ShotSpotter Gunshot Location System*, CTOVISION.COM (Aug. 8, 2011), <https://ctovision.com/2011/08/shotspotter-gunshot-location-system/> (“While earlier they would focus on corroborating witness accounts, they can now use ShotSpotter data to verify stories.”); Shafer, *supra* note 29.

112. Ty Swenson, *Longtime West Seattle Block Watch Captain’s Request Might Just Come True: Gunshot Locators for Seattle*, W. SEATTLE HERALD (Sept. 19, 2012), <http://www.westseattleherald.com/2012/09/19/news/longtime-west-seattle-block-watch-captain-s-reque>.

113. Freskos, *supra* note 53.

114. Buckley, *supra* note 49.

115. Klein, *supra* note 79 (“The department is tying the ShotSpotter into other technology to make it more effective, officials said. For example, the city plans to eventually link the police force’s 72 surveillance cameras to the gun sensors . . .”); Petho et al., *supra* note 22.

116. Delores Handy, *Surveillance Technology Helps Boston Police Find Location of Gunfire*, 90.9 WBUR: BOSTON’S NPR NEWS STATION (Dec. 23, 2011), <http://www.wbur.org/2011/12/23/shotspotter>.

117. *Id.*

118. Kurlyandchik, *supra* note 33.

119. *Id.*

120. Petho et al., *supra* note 22.

121. EFFICACY STUDY, *supra* note 63, at 6.

very formal and rigorous review.”<sup>122</sup> Reasons for these mistakes can be gun silencers, shots fired into an automobile, “execution style” close-range shootings, or gunfire in a “canyonlike area.”<sup>123</sup> Sometimes ShotSpotter detects gunshots that turn out to be instances of celebratory gunfire,<sup>124</sup> but the sensors can also detect other loud sounds that help resolve different tragedies like a plane crash.<sup>125</sup>

One way ShotSpotter attempts to minimize false positives<sup>126</sup> is through “spatial filtering” so that loud noises, such as a dog barking, do not fool the sensors; those noises would only reach one sensor and therefore would not complete the triangulation necessary to pinpoint a location.<sup>127</sup> ShotSpotter also engages in an advanced classification procedure.<sup>128</sup> Additionally, the “Average Joe” can help augment technological growth and precision by reviewing camera feeds surrounding the area where a gunshot was recorded to inspect if there are abnormalities on their screen.<sup>129</sup> Other citizens may then verify the findings and then notify the police.<sup>130</sup>

Trenton, New Jersey, provides an example where local government declined to expand the technology’s presence after the technology did not detect a fatal shooting on Christmas Day even though the sensors were geographically proximate to the shooting location.<sup>131</sup> These technical problems, however, are rare and comprise only the tip of the proverbial iceberg as the technology has spurred privacy concerns by citizens and organizations alike.

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122. Petho et al., *supra* note 22 (statement of Crane, who manages ShotSpotter for the Washington D.C. police).

123. *Id.*

124. *Calling the Shots*, *supra* note 50; Petho et al., *supra* note 22.

125. Sue Dremann & Tyler Hanley, *ShotSpotter System Records Tragic Plane Crash*, PALO ALTO ONLINE (Feb. 19, 2010, 9:55 AM), <http://www.paloaltoonline.com/news/2010/02/19/shotspotter-system-records-tragic-plane-crash>. In the plan crash situation, ShotSpotter recorded the actual crash and resulting screams a few seconds after impact and the recordings were used for forensic purposes. *Id.* But the most interesting tidbit is that the recording began “a few seconds before the sound of the crash.” *Id.* “For forensic purposes, all loud, impulsive noises are logged by ShotSpotter systems, even if they do not trigger an automatic alert, in case those noises needed to be reviewed after-the-fact . . .” *Id.* This seems contrary to ShotSpotter’s promises they are not lurking and listening at all times.

126. EFFICACY STUDY, *supra* note 63, at 7 (“The false positive . . . is the single most common complaint of ShotSpotter users. False positives pose an operational problem.”); *see also* Bereiter, *supra* note 109.

127. Shafer, *supra* note 29.

128. *Id.*

129. Jonathan Zittrain, *Privacy 2.0*, 2008 U. CHI. LEGAL F. 65, 78 (2008). Interestingly, citizens in high-crime cities like New Orleans and Philadelphia are also attempting to help the police with surveillance. Adrienne Jeffries, *The Camera Next Door: How Neighbors Watch Neighbors in New Orleans*, THE VERGE (Nov. 13, 2013, 11:59 AM), <http://www.theverge.com/2013/11/13/4842150/new-orleans-safecams8-citizen-surveillance>. Private citizen video surveillance, called SafeCams8 in New Orleans and Safecam in Philadelphia, are becoming a popular trend. *Id.*

130. Zittrain, *supra* note 129, at 78.

131. *ShotSpotter, Gunshot Detection System, Helps Cops Find Killers (VIDEO)*, HUFF POST CRIME (Apr. 25, 2012, 2:53 AM), [http://www.huffingtonpost.com/2012/04/24/shotspotter\\_n\\_1450650.html](http://www.huffingtonpost.com/2012/04/24/shotspotter_n_1450650.html) [hereinafter HUFF POST CRIME]. Some cities also ceased their subscriptions due to ShotSpotter’s “lack of specificity.” *OPD ShotSpotter*, *supra* note 68.

*E. The ACLU and Other Critics*

The American Civil Liberties Union (“ACLU”) did not originally oppose ShotSpotter,<sup>132</sup> but after the incident in New Bedford, individuals within the organization outwardly voiced concerns.<sup>133</sup> Jay Stanley highlighted the concern “whether microphones can be remotely activated by police who want to listen to nearby conversations.”<sup>134</sup> Moreover, the ACLU does not believe the technology is reliable and fears that police would infiltrate neighborhoods under false alarms.<sup>135</sup> The ACLU plans to monitor the technology to ensure that the police do not use ShotSpotter to circumscribe privacy rights.<sup>136</sup> The organization, however, has yet to take any direct action.<sup>137</sup>

The ACLU is not alone in voicing concerns. A spokesperson for the Center for Media Education noted that ShotSpotter is “[t]he first visible example that we’re creating an infrastructure of surveillance”<sup>138</sup> and some disbelieve governmental contentions that the technology would solely be used to identify gunshots.<sup>139</sup> For example, a spokesperson for the Seattle Privacy Coalition acknowledged that a city cannot simply use a “technological Band-Aid on a deep social issue” and disbelieves that ShotSpotter only detects gunshots.<sup>140</sup> He insists that the sensors are always recording and “[w]hether it gets saved or not depends on whether there’s an actual gunshot” and perhaps they could reach conversations on the sidewalk.<sup>141</sup> Can a boisterous laugh or a jovial clap of the hands also trigger the sensors?

Some citizens echo these concerns and argue that the sensors are not always employed in regions with a history of gun violence and police have lied to citizens about when the technology has gone “live” in their city.<sup>142</sup> Moreover, critics suggest that police are already aware of heavy gunfire zones in the cities and simply adding more patrolling officers may

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132. Edward Reilly, *Gunshot Detection Systems Need to be Closely Monitored*, AM. CIV. LIBERTIES UNION OF ME. (June 5, 2012, 2:45 PM), <http://www.aclumaine.org/gunshot-detection-systems-need-be-closely-monitored>.

133. Jay Stanley, *Gunshot Detectors: the ACLU’s View*, ACLU (May 29, 2012, 3:37 PM), <https://www.aclu.org/blog/technology-and-liberty-national-security-criminal-law-reform/gunshot-detectors-aclus-view>.

134. *Id.*

135. HUFF POST CRIME, *supra* note 131.

136. Stanley, *supra* note 133.

137. Handy, *supra* note 116. The ACLU has, however, interviewed the ShotSpotter CEO. Jay Stanley, *ShotSpotter CEO Answers Questions on Gunshot Detectors in Cities*, ACLU (May 5, 2015, 9:15 PM), <https://www.aclu.org/blog/free-future/shotspotter-ceo-answers-questions-gunshot-detectors-cities>.

138. Benjamin, *supra* note 101, at 7.

139. *Id.* (statement of Scott Greenwood).

140. Natasha Chen, *Seattle Considers Acoustic Gunshot Locator*, KIRO7.COM (Nov. 24, 2014, 10:59 PM), [http://www.kiro7.com/news/news/seattle-considers-acoustic-gunshot-locator/njFW9/#\\_\\_federated=1](http://www.kiro7.com/news/news/seattle-considers-acoustic-gunshot-locator/njFW9/#__federated=1).

141. *Id.*

142. Cedar Posts, *ShotSpotter CMPD Tool or Gimmick?*, CEDAR POSTS AND BARBED WIRE FENCES BLOG (Aug. 19, 2012, 12:30 AM), <http://cedarposts.blogspot.com/2012/08/shotspotter-cmpd-tool-or-gimmick.html>.

help to mitigate the violence.<sup>143</sup> Perhaps increasing manpower is the cheaper alternative to this pricey tool. These arguments seem to support the notion that ShotSpotter may not entirely deserve its lauded pedestal.

Although ShotSpotter claims it is not currently used to capture a conversation, that is not to say that the technology could not be modified in the future for more intrusive uses.<sup>144</sup> What if, for example, ShotSpotter tinkers with their devices to actively and consistently listen for conversations if police pay a higher price? ShotSpotter acknowledged “three extremely rare ‘edge cases’” out of three million detected incidents in the last decade where the sensors recorded people shouting in a public street at the location where the sensors detected gunfire.<sup>145</sup> ShotSpotter claimed these recordings were only for a “brief period (a few seconds).”<sup>146</sup> These “edge cases” alone warrant suspicion, as the difference between a human voice and a gunshot audio signature are night and day.

#### F. *The Fourth Amendment and the Frameworks*

Citizens now fear ShotSpotter’s unknown capabilities, in conjunction with potential conversation recording functions.<sup>147</sup> They fret that Big Brother, a draconian government described in George Orwell’s *1984*,<sup>148</sup> listens to their every move and thus infringes on Fourth Amendment rights. Arguably, while the technology has the potential to increase security and protect citizens, it also has the capability of destroying lives.<sup>149</sup> This begs the question: is ShotSpotter a “slippery slope”<sup>150</sup> towards complete government invasion of personal privacy under the Fourth Amendment, or simply an effective crime deterrent necessary in today’s world?

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143. Chen, *supra* note 140.

144. See Benjamin, *supra* note 101, at 7; *ShotSpotter is an Appropriate Tool*, *supra* note 27 (“[T]he fact that a government device may be monitoring audio raises questions about exactly what is being recorded and how it is used.”).

145. *ShotSpotter is an Appropriate Tool*, *supra* note 27. ShotSpotter also stated this occurred five times, but still emphasized the rarity of this situation. Weissman, *supra* note 11.

146. *ShotSpotter is an Appropriate Tool*, *supra* note 27. Again, this time was enough to provide suspect identification. Weissman, *supra* note 11.

147. AlexOlesker, *supra* note 111 (“Surprisingly, no civil liberty or surveillance concerns have been raised in communities with ShotSpotters, despite being a system of microphones.”); Benjamin, *supra* note 101, at 7; Richard Elliot, *Atlanta Looks at Technology to Track Gunfire*, WSB-TV ATLANTA (May 11, 2012, 5:45 PM), <http://www.wsbtv.com/news/news/local/atlanta-looks-technology-track-gunfire/nN4b7/>. But see EFFICACY STUDY, *supra* note 63, at 15. For an intellectually stimulating debate (note, sarcasm) on whether people should be concerned, and comparing what happened in New Bedford and Oakland, see *Oakland’s Shotspotter Equipment Records Voice Conversations*, REDDIT, [http://www.reddit.com/r/oakland/comments/26naoz/oaklands\\_shotspotter\\_equipment\\_records\\_voice/](http://www.reddit.com/r/oakland/comments/26naoz/oaklands_shotspotter_equipment_records_voice/) (last visited April 21, 2016).

148. See generally GEORGE ORWELL, *1984* (1949).

149. See MCINNIS, *supra* note 50, at 267.

150. Benjamin, *supra* note 101, at 7.

### 1. *The Amendment*

Naturally, when dealing with privacy concerns of this nature, one first gravitates towards constitutional violations under the Fourth Amendment. Courts indeed use the Fourth Amendment as the “first line of defense” against new technologies harnessed by the government to invade personal privacy.<sup>151</sup>

In determining ShotSpotter’s constitutionality, one must first ask whether the technology even sparks Fourth Amendment protection.<sup>152</sup> The Fourth Amendment protects:

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, [and] 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.<sup>153</sup>

Seemingly, when ShotSpotter sensors detect more than mere gunshots, the Fourth Amendment implications are impossible to ignore. In fact, commentators suggest that if technology of this nature intrudes into an individual’s reasonable expectation of privacy, then the technology necessarily crosses the threshold into Fourth Amendment territory.<sup>154</sup>

In general, the Fourth Amendment does not guarantee a constitutional right to privacy; instead, citizens rely on a penumbra implied within the constitutional language.<sup>155</sup> Courts, however, read the amendment language broadly to include more than physical affects; conversations are also included.<sup>156</sup>

When analyzing a Fourth Amendment concern, courts must determine if the government’s behavior equals a search, and, if there is a search, whether it is reasonable.<sup>157</sup> Scholar Orin S. Kerr summed up the analysis succinctly:

The reasonable expectation of privacy test distinguishes investigative steps that the Fourth Amendment regulates from investigative steps that it does not regulate. If government conduct violates a reasonable expectation of privacy, then that conduct is a “search” and is legal only if justified by a search warrant or a specific exception to

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151. Orin S. Kerr, *The Fourth Amendment and New Technologies: Constitutional Myths and the Case for Caution*, 102 MICH. L. REV. 801, 805 (2004) [hereinafter *Kerr: Constitutional Myths*].

152. MCINNIS, *supra* note 50, at 267.

153. U.S. CONST. amend. IV.

154. Ric Simmons, *Technology-Enhanced Surveillance by Law Enforcement Officials*, 60 N.Y.U. ANN. SURV. AM. L. 711, 712–13 (2005); *see also Kerr: Constitutional Myths, supra* note 151, at 804. *But see Electronic Surveillance*, 34 GEO. L.J. ANN. REV. CRIM. PROC. 124, 149 (2005) (noting that “intrusions involved in the installation of surveillance devices do not necessarily implicate the Fourth Amendment.”).

155. *See* *Griswold v. Connecticut*, 381 U.S. 479, 484 (1965); Benjamin, *supra* note 101, at 2. *But see* Benjamin, *supra* note 101, at 2–3 (“Arguably the most explicit grant in the Constitution to be free from governmental intrusions is the Fourth Amendment . . . . One of the primary functions of the Fourth Amendment is to protect innocent citizens’ right to privacy.”).

156. *See* *Katz v. United States*, 389 U.S. 347, 353 (1967).

157. Kent Greenfield, Note, *Cameras in Teddy Bears: Electronic Visual Surveillance and the Fourth Amendment*, 58 U. CHI. L. REV. 1045, 1049 (1991).

the warrant requirement such as consent or exigent circumstances. On the other hand, if government action does not implicate a reasonable expectation of privacy, then the Fourth Amendment does not regulate it and investigators can take that step at any time without constitutional limitation.<sup>158</sup> The trial court determines how reasonable a search is based on the facts and circumstances presented.<sup>159</sup> Whether searches or intrusions are negligible is highly relevant in this determination.<sup>160</sup> Additionally, some scholars say Fourth Amendment protections should not rely on evolving technology.<sup>161</sup> Arguably, emerging technologies do not render personal information any more private than before.<sup>162</sup> Perhaps questions of unconstitutionality should center on the information gathered, rather than the technology used to acquire it.<sup>163</sup>

Fourth Amendment jurisprudence includes other components as well. In *Berger v. State of New York*, the Supreme Court stated “[t]he security of one’s privacy against arbitrary intrusion by the police—which is at the core of the Fourth Amendment—is basic to a free society.”<sup>164</sup> The Court also noted that the Amendment serves to protect citizens and their privacy against government officials acting in an arbitrary manner.<sup>165</sup> An individual can withdraw into his or her residence against intrusions, and the immediate circumference around one’s home is included in this protection.<sup>166</sup> Search warrants comprise the specific practical method with which courts protect citizens from potentially intrusive government behavior.

Searches form the integral concept of Fourth Amendment jurisprudence and they exist on varying levels of intrusiveness. Arguably the most dangerous type is the “hyper-intrusive search” which is “so invasive of an individual’s privacy that the courts or Congress have decided that law enforcement must meet a higher standard than mere ‘probable cause’ in order to undertake the surveillance.”<sup>167</sup> Searches of this nature

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158. Orin S. Kerr, *Four Models of Fourth Amendment Protection*, 60 STAN. L. REV. 503, 507–08 (2007).

159. *Berger v. New York*, 388 U.S. 41, 53 (1967).

160. *Maryland v. King*, 133 S. Ct. 1958, 1963 (2013) (“[T]he ultimate measure of the constitutionality of a governmental search.”).

161. Tracey Maclin, Katz, Kyllo, and *Technology: Virtual Fourth Amendment Protection in the Twenty-First Century*, 72 MISS. L.J. 51, 51 (2002).

162. Simmons, *supra* note 154, at 715 (“The information is no more ‘private’ simply because the government uses a new technology to acquire it. In fact, according to the Court’s analysis, new technologies are more palatable because they are less physically intrusive.”).

163. *Id.* at 732 (“We should always ask: what is the nature of the information the government is receiving? If the information is reasonably expected to be private, then the search is unconstitutional (and is likely hyper-intrusive), regardless of the method.”). Simmons went on to explain that “[h]igh-volume data technologies that merely increase the efficiency of investigations by law enforcement agents should be evaluated with the same question: what is the nature of the information that is being collected and sorted?” *Id.* Machine efficiency surveillance “does not mean that the nature of the surveillance is fundamentally altered.” *Id.*

164. *Berger*, 388 U.S. at 53 (quoting *Wolf v. Colorado*, 338 U.S. 25, 27 (1949)).

165. *Id.* (quoting *Camara v. San Francisco*, 387 U.S. 523, 528 (1967)).

166. *Florida v. Jardines*, 133 S. Ct. 1409, 1412 (2013).

167. Simmons, *supra* note 154, at 722.

indicate several common traits: “they are overbroad (in that they retrieve far more information than they are seeking); they occur without notice; they are ongoing; and they pose an unusual threat to human dignity.”<sup>168</sup> Newer technologies such as “electronic listening devices” often fall into this category.<sup>169</sup> ShotSpotter could be termed an emerging technology, as it is not completely ubiquitous and emerged on the scene within the past two decades. The sensors evidently can also be considered a listening device and the technology has recorded more information than the sensors are supposedly seeking.

Generally, a warrant is necessary to conduct a search, unless the intrusion is minimal or there is no reasonable expectation of privacy.<sup>170</sup> Without a warrant, police must rationalize why they are interfering with an individual’s liberty to avoid Fourth Amendment sanctions.<sup>171</sup> Yet, warrantless searches are not “presumptively illegitimate.”<sup>172</sup> For example, sometimes, for “special law enforcement needs, diminished expectations of privacy, minimal intrusions, or the like, the Court has found that certain general, or individual, circumstances may render a warrantless search or seizure reasonable.”<sup>173</sup>

The warrant requirement, however, has become more malleable with the advent of new technology, and courts have not applied the requirement as faithfully as in the past.<sup>174</sup> Courts frequently allow law enforcement to circumvent normal warrant requirements with emerging, sophisticated technologies and disallow an expectation of privacy the defendant may have enjoyed.<sup>175</sup> One student author commented that no matter how beneficial the technology proves to be it does not outweigh privacy concerns, and therefore it should be subject to an unwavering, universal warrant requirement.<sup>176</sup> Along this corollary, no matter how immediately necessary the government interests may be, that does not give law enforcement a blank check.<sup>177</sup>

Even with this lenient standard, one police commissioner opined that ShotSpotter data alone would likely not be sufficient to obtain a

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168. *Id.* at 722–23.

169. *Id.* at 722.

170. *Illinois v. McArthur*, 531 U.S. 326, 330 (2001).

171. Elizabeth E. Joh, *Privacy Protests: Surveillance Evasion and Fourth Amendment Suspicion*, 55 ARIZ. L. REV. 997, 1014 (2013). Evidence, however, shows that the United States Supreme Court has been fairly lenient towards police officers. *Id.* (“The Supreme Court’s Fourth Amendment decisions, however, have not regulated police suspicion very restrictively. For more than forty years, the Court has issued decisions that have both departed from the Fourth Amendment’s literal probable cause requirement as well as sanctioned lesser degrees of police suspicion that permit interference with individual privacy.”).

172. AKHIL REED AMAR, *THE BILL OF RIGHTS* 70 (1998).

173. *Maryland v. King*, 133 S. Ct. 1958, 1969 (2013) (citation omitted).

174. Benjamin, *supra* note 101, at 3.

175. Marc McAllister, *The Fourth Amendment and New Technologies: The Misapplication of Analogical Reasoning*, 36 S. ILL. U. L.J. 475, 477 (2012).

176. Brittany Hampton, Note, *From Smartphones to Stingrays: Can the Fourth Amendment Keep Up With the Twenty-First Century?*, 51 U. LOUISVILLE L. REV. 159, 176 (2012).

177. *King*, 133 S. Ct. at 1970.

search warrant.<sup>178</sup> A possible avenue could be an anticipatory warrant, as they do not violate the Fourth Amendment.<sup>179</sup> Anticipatory warrants, however, may still be too nascent to accurately predict how they will square with emerging technologies generally and with ShotSpotter specifically.

While the nuanced specifics of Fourth Amendment requirements are relevant to ShotSpotter analyses, the illusive Fourth Amendment frameworks may be the most indicative prediction of how ShotSpotter will be dissected when, not if, the technology's constitutionality will come into court. This Note will now delve into relevant Fourth Amendment framework case law.

## 2. *Katz v. United States*

Historically, searches required physical intrusion into a private space.<sup>180</sup> Now, *Katz v. United States* provides the foundational standard for determining when a governmental intrusion qualifies as a "search."<sup>181</sup> In *Katz*, the lower court convicted the petitioner of violating a federal statute when he conveyed wagering information to another individual over the phone, in a public phone booth.<sup>182</sup> The government attached an electronic audio surveillance sensor outside of the phone booth and picked up the petitioner's conversation; the court allowed the government to introduce this evidence in trial.<sup>183</sup> The Court of Appeals affirmed and did not entertain notions that this conduct violated the petitioner's right to privacy under the Fourth Amendment since the technology did not physically enter into the booth where the petitioner made his call.<sup>184</sup>

The U.S. Supreme Court majority noted that the Fourth Amendment is not a blanket privacy right and it does not protect places; rather, it protects people.<sup>185</sup> Physical intrusion is no longer a prerequisite.<sup>186</sup> The

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178. Ben Arnoldy, *High-Tech Police Tool Pinpoints Where a Gun is Fired*, USA TODAY (Jan. 22, 2007, 9:16 AM), [http://usatoday30.usatoday.com/tech/news/technovations/2007-01-22-shotspotter-police\\_x.htm](http://usatoday30.usatoday.com/tech/news/technovations/2007-01-22-shotspotter-police_x.htm).

179. *United States v. Grubbs*, 547 U.S. 90, 94 (2006); MCINNIS, *supra* note 50, at 271. The Supreme Court defined anticipatory warrants as "a warrant based upon an affidavit showing probable cause that at some future time (but not presently) certain evidence of crime will be located at a specified place." *Grubbs*, 547 U.S. at 94; *see also* David C. Mount, *Case Law Alert: U.S. Supreme Court Approves the Use of Anticipatory Search Warrants*, THE POLICE CHIEF (July 2006), [http://www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display\\_arch&article\\_id=939&issue\\_id=72006](http://www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=939&issue_id=72006).

180. *See Olmstead v. United States*, 277 U.S. 438 (1928).

181. 389 U.S. 347 (1967); *see Maclin, supra* note 161, at 77 ("Katz was its 'lodestar' for determining whether government-initiated electronic surveillance triggered Fourth Amendment scrutiny."); Simmons, *supra* note 154, at 714 ("The starting point for any discussion of the constitutionality of technology-enhanced surveillance is the landmark Supreme Court case of *Katz v. United States*."); Peter Winn, *Katz and the Origins of the "Reasonable Expectation of Privacy" Test*, 40 MCGEORGE L. REV. 1, 1 (2009).

182. *Katz*, 389 U.S. at 348.

183. *Id.*

184. *Id.* at 348–49.

185. *Id.* at 350–51 ("What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection . . . . But what he seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected.")

Court rejected the government's contentions and reversed the lower court decisions holding that this activity amounted to a "search."<sup>187</sup>

Justice Black's dissent is particularly interesting, yet future courts have not relied on his opinion. He stated that the Court should not bend the whims of the Fourth Amendment to achieve more harmonious results with modern interpretations.<sup>188</sup> Justice Black focused on the historical aspects of the Fourth Amendment, noting that the language related to tangibles and an eavesdropped conversation is not included within the meaning of the amendment.<sup>189</sup> Thus, one cannot search nor seize conversations.<sup>190</sup> Justice Black discussed how the Framers knew about various means to eavesdrop and if they had desired to ward against that type of behavior, they would have worded the Amendment accordingly and not left these questions to the interpretations of judges.<sup>191</sup> Therefore, Justice Black argued that the Fourth Amendment's notions of eavesdropping have not evolved with modern day conceptions.<sup>192</sup> Justice Black also feared the majority's holding went too far in that it encompassed future conversations, which would be problematic in terms of obtaining a warrant.<sup>193</sup> Justice Black stated that the Fourth Amendment does not cover eavesdropped conversations<sup>194</sup> and chastised the Court for manipulating the Fourth Amendment in such a way as to invalidate ideas that contravene their ideas of privacy.<sup>195</sup>

Justice Harlan's concurrence in *Katz*, however, paved the road for courts in the future. Justice Harlan's proposal was twofold, it required "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>196</sup> Justice Harlan's significant contribution is his second prong.<sup>197</sup> He pointed to *Silverman v. United States*<sup>198</sup> and noted that if technology picked up conversations that were "reasonably intended to be private" then this could amount to a search and seizure under the Fourth Amendment.<sup>199</sup> This test, however, does not define what a "reasonable expectation of privacy" is nor how courts should rule; the analysis will be fact specific.<sup>200</sup> Problems with the *Katz* framework emerged in subsequent cases, such as *Kyllo* and *Jones*, which will be discussed below.

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186. *Id.* at 353.

187. *Id.* at 359.

188. *Id.* at 364 (Black, J., dissenting).

189. *Id.* at 365 (Black, J., dissenting).

190. *Id.*

191. *Id.* at 366 (Black, J., dissenting).

192. *Id.*

193. *Id.* at 365 (Black, J., dissenting).

194. *Id.* at 366 (Black, J., dissenting).

195. *Id.* at 374 (Black, J., dissenting).

196. *Id.* at 361 (Harlan, J., concurring).

197. Benjamin, *supra* note 101, at 3.

198. 365 U.S. 505 (1961).

199. *Katz*, 389 U.S. at 362 (Harlan, J., concurring).

200. Winn, *supra* note 181, at 12.

### 3. *Kyllo v. United States*

In the wake of *Katz*, courts found it difficult to apply the *Katz* framework to other cases involving new technological methods of surveillance<sup>201</sup> and wandered toward a bright-line framework.<sup>202</sup> Nearly thirty-five years later, in *Kyllo v. United States*, the Court analyzed whether thermal imaging is the equivalent of a “search” for Fourth Amendment purposes.<sup>203</sup> *Kyllo* “signaled a heightened judicial awareness of the dangers that technology posed to individual privacy.”<sup>204</sup>

In *Kyllo*, the government suspected that the petitioner grew marijuana inside his home, and police officers used a thermal imaging device to virtually look inside his home for radiation indicating the thermal lamps necessary for marijuana production.<sup>205</sup> The petitioner desired to hide any evidence found by the thermal imaging, as it was an unconstitutional search under the Fourth Amendment.<sup>206</sup> In a 5-4 decision, the Court held this activity amounted to a “search” and formulated yet another Fourth Amendment framework: if police obtain information using technology that could not have been obtained without a “physical intrusion” ordinarily, then there is a “search” under the Fourth Amendment.<sup>207</sup>

*Kyllo* also stands for the idea that Fourth Amendment jurisprudence delineates a boundary “at the entrance to the house.”<sup>208</sup> The majority focused on preserving privacy rights that existed when the Framers drafted the Fourth Amendment at the very least.<sup>209</sup> The Court believed that a clear “specification of those methods of surveillance that require a warrant” is needed.<sup>210</sup> Justice Scalia wanted to craft a bright-line standard to aid law enforcement,<sup>211</sup> since police officers may not be able to predict how much their devices will reveal.<sup>212</sup>

Justice Stevens dissented, arguing that the bright-line rule crafted by the majority was both superfluous and incompatible with the Fourth Amendment.<sup>213</sup> Justice Stevens regurgitated case law noting that “searches and seizures of property in plain view are presumptively reasonable” and “[w]hat a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection.”<sup>214</sup> Jus-

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201. Melissa Arbus, Note, *A Legal U-Turn: The Rehnquist Court Changes Direction and Steers Back to the Privacy Norms of the Warren Era*, 89 VA. L. REV. 1729, 1731 (2003).

202. *Kyllo v. United States*, 533 U.S. 27, 40 (2001).

203. *Id.* at 29–30.

204. Maclin, *supra* note 161, at 91.

205. *Kyllo*, 533 U.S. at 29–30.

206. Richard Seamon, *New Technology Brings Up Old Question: The Fourth Amendment and the Issue of Search*, 13 S.C. LAW. 23, 24 (2001).

207. *Kyllo*, 533 U.S. at 34–35.

208. *Id.* at 40.

209. Seamon, *supra* note 206, at 24.

210. *Kyllo*, 533 U.S. at 40.

211. Seamon, *supra* note 206, at 24.

212. Maclin, *supra* note 161, at 67.

213. *Kyllo*, 533 U.S. at 41 (Stevens, J., dissenting).

214. *Id.* at 42 (Stevens, J., dissenting) (citations omitted).

tice Stevens also discussed how thermal imaging technology is a quiescent device.<sup>215</sup> As the Court continually confronted privacy concerns with different types of technology, the *Kyllo* framework clearly appeared limited and impractical in later decisions.

#### 4. United States v. Jones

Twelve years later, the Supreme Court reached another important crossroads in Fourth Amendment jurisprudence in *Jones*. In *Jones*, the majority, penned again by Justice Scalia, held that police conducted a search when they attached a GPS tracking device to a suspect's car.<sup>216</sup> The government procured a search warrant to track the car that belonged to the respondent's wife, but attached the device on the car the day after the warrant expired.<sup>217</sup> After twenty-eight days the government indicted Jones with charges of drug trafficking conspiracy.<sup>218</sup> The Court rejected several government contentions, including that Jones enjoyed no "reasonable expectation of privacy" under the *Katz* framework, as the car was on public roadways.<sup>219</sup>

In her concurrence, Justice Sotomayor considered specific attributes of GPS monitoring technology.<sup>220</sup> Justice Alito also penned a concurring opinion, which is often seen as a new *Katz* framework,<sup>221</sup> stating that the appropriate question and interpretation of the Fourth Amendment is "whether respondent's reasonable expectations of privacy were violated by the long-term monitoring of the movements of the vehicle he drove."<sup>222</sup> Justice Alito believed that police execute a search when the reasonable person would not have foreseen that level of invasion in the particular circumstances of the case.<sup>223</sup> Justice Alito's concurrence indicates that all adequately cutting-edge technology with the power to gather information would constitute a search.<sup>224</sup> He concentrated on the unexpected length of time for the surveillance and how that would appear to citizens.<sup>225</sup> Justice Alito's citation to *United States v. Knotts*<sup>226</sup> and his resulting determination that "short-term monitoring on public streets likely accords with society's [reasonable expectation of privacy] and is

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215. Seamon, *supra* note 206, at 24.

216. *United States v. Jones*, 132 S. Ct. 945, 945 (2012).

217. *Id.* at 946.

218. *Id.*

219. *Id.* at 950.

220. *Id.* at 956 (Sotomayor, J., concurring) ("I would ask whether people reasonably expect that their movements will be recorded and aggregated in a manner that enables the Government to ascertain, more or less at will, their political and religious beliefs, sexual habits, and so on.").

221. Jonathan Siegel & Kate Hadley, Note, *Jones's Second Majority Opinion: Justice Alito's Concurrence and the New Katz Test*, 31 YALE L. & POL'Y REV. INTER ALIA 1, 2 (2012).

222. *Jones*, 132 S. Ct. at 958 (Alito, J., concurring).

223. Siegel & Hadley, *supra* note 221, at 2.

224. *Id.* at 7.

225. *Id.* at 2.

226. 460 U.S. 276 (1983).

not a search”<sup>227</sup> might lend an analogy to ShotSpotter. This concurrence, some have noted, could revamp Fourth Amendment jurisprudence.<sup>228</sup>

In fact, scholars predicted the *Jones* decision to be a turning point, a “realignment” of sorts, in Fourth Amendment jurisprudence.<sup>229</sup> The majority insisted that they used the trespass approach before addressing the *Katz* approach, and if there had been no physical trespass the court would have wound up framing the opinion in the light of *Katz*.<sup>230</sup> One of the most important components of *Jones* is the “explicit acknowledgement by at least five Justices on the current Court that protecting Fourth Amendment rights in the electronic age demands more than it did in the Eighteenth Century.”<sup>231</sup> Yet, the Fourth Amendment and the relevant case law are not the only lights in which to observe ShotSpotter, as there are other elements, such as federal or state statutes, at play.

### G. Statutory Alternatives

ShotSpotter may also be analyzed under and run afoul of federal and state statutes. The following section will first turn towards the federal statute that would cover ShotSpotter technology and then will discuss a local statutory example, the Illinois Eavesdropping Statute.

#### I. The Omnibus Crime Control and Safe Streets Act of 1968

Statutory protections may also preserve privacy rights and some focus specifically on technological measures that may circumscribe those rights. The federal government monitors technology that picks up oral and electronic communications under Title III of the Omnibus Crime Control and Safe Streets Act of 1968,<sup>232</sup> which was enacted post-*Katz*. The purpose of this Act is to address the high crime rates throughout the United States.<sup>233</sup> This was Congress’s first attempt at circumscribing the boundaries of governmental surveillance; Congressional action has become relatively dormant since this Act.<sup>234</sup>

Title III “prohibits all wiretapping and electronic surveillance by persons other than duly authorized law enforcement officials engaged in the investigation of specified types of major crimes after obtaining a

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227. Vikram Iyengar, Note, *U.S. v. Jones: Inadequate to Promote Privacy for Citizens and Efficiency for Law Enforcement*, 19 TEX. J. ON C.L. & C.R. 335, 337 (2014).

228. Siegel & Hadley, *supra* note 221, at 1.

229. Jason D. Medinger, *Post-Jones: How District Courts Are Answering the Myriad Questions Raised by the Supreme Court’s Decision in United States v. Jones*, 42 U. BALT. L. REV. 395, 396 (2013).

230. Andrea Lance, *Back to the Future of Your Privacy Rights: U.S. v. Jones*, 95 MASS. L. REV. 214, 215 (2013).

231. Hampton, *supra* note 176, at 167 (citations omitted).

232. 18 U.S.C. § 2510 (2012). The Act conforms to the “constitutional standards” embodied in *Katz*. S. REP. NO. 90-1097, at 2113 (1968).

233. Omnibus Crime Control and Safe Streets Act of 1968, Pub. L. No. 90-351, 82 Stat. 197, 197 (1968).

234. Ebony Morris, Note, *Always Eyes Watching You: United States v. Jones and Congress’s Attempts to Stop Warrantless Government Surveillance*, 40 S.U. L. REV. 489, 501 (2013).

court order.”<sup>235</sup> ShotSpotter technology, when the sensors record human voices, comes within the provisions of this Act.<sup>236</sup> The Act specifically carves out a specific procedure to obtain permission<sup>237</sup> and certain crimes<sup>238</sup> where communication interception is legal. Cities do not obtain court orders before installing ShotSpotter sensors, perhaps because the technology is still on the cusp of becoming a recognized listening device.

Section 301(b)(1) of the Act allows grants for “law enforcement purposes” that include “[p]ublic protection, including the development, demonstration, evaluation, implementation, and purchase of methods, devices, facilities, and equipment designed to improve and strengthen law enforcement and reduce crime in public and private places.”<sup>239</sup> Overall, this language would appear to endorse technology like ShotSpotter, with its aforementioned crime-fighting purpose.

In terms of evidence, the Act recognizes that technology has intercepted private communications and that this evidence appeared in courtrooms.<sup>240</sup> The Act acknowledges the dangers this presents and calls for a uniform standard to apply to these communications. Section 801(d) states:

To safeguard the privacy of innocent persons, the interception of wire or oral communications where none of the parties to the communication has consented to the interception should be allowed only when authorized by a court of competent jurisdiction and should remain under the control and supervision of the authorizing court. Interception of wire and oral communications should further be limited to certain major types of offenses and specific categories of crime with assurances that the interception is justified and that the information obtained thereby will not be misused.<sup>241</sup>

This Act prohibits the use of any intercepted communications as evidence in a trial.<sup>242</sup> Seemingly, when ShotSpotter detects human conversations, Title III prevents the evidence in trial.

While no claims have been filed against ShotSpotter alleging violations under Title III at the time of this publication, the unknown capabilities are only now garnering media attention and relatively little literature exists on the topic. While the lack of alleged violations may be a blessing for ShotSpotter, this may also be a hurdle for ShotSpotter evidence admissibility going forward. The Act explicitly grants the court supervisory authority over interception and ShotSpotter will need to survive specific standards.<sup>243</sup> Federal statutes like Title III, however, are not

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235. S. REP. No. 90-1097, at 2113.

236. Omnibus Crime Control and Safe Streets Act of 1968 § 2510(5)(a).

237. *Id.* § 2518.

238. *Id.* § 2516(2).

239. *Id.* § 301(b)(1).

240. *Id.* § 801(a).

241. *Id.* § 801(d).

242. *Id.* § 2515.

243. *See infra* notes 373–413 and accompanying text.

the only statutory means that may impact ShotSpotter technology, as state versions may also play a significant role.

## 2. *Local Flavor: The Illinois Eavesdropping Statute*

States may employ more strict criteria than those described in Title III,<sup>244</sup> which may crucify ShotSpotter when their federal counterparts cannot. One form could be an eavesdropping statute, which generally covers audio technology but not video technology.<sup>245</sup> The Illinois Eavesdropping Statute, also the state's wiretap statute, is one such stringent statute.<sup>246</sup> Under the statute, it is legal for Illinois law enforcement to "purchase, or possess an eavesdropping device in preparation for or with- in the course of their official duties."<sup>247</sup>

In March 2014, the Illinois Supreme Court in *People v. Clark* held section (a)(1)(A) of this statute to be unconstitutional as it is over- broad.<sup>248</sup> That section read:

(a) A person commits eavesdropping when he or she knowingly and intentionally:

(1) Uses an eavesdropping device, in a surreptitious manner, for the purpose of overhearing, transmitting, or recording all or any part of any private conversation to which he or she is not a party unless he or she does so with the consent of all of the parties to the private conversation . . . .<sup>249</sup>

The Illinois Supreme Court believed this language criminalized innocent public recordings and conduct.<sup>250</sup> The opinion acknowledged the evolu- tion of technology and how that hampered relevant restrictions, but the justices felt that this concept did not negate their concerns of an overly- broad statute that violated constitutional rights.<sup>251</sup> The justices also noted a serious deficiency: namely, how the previous Illinois statute did not in- clude a guideline for whether an individual had an expectation of privacy at the time.<sup>252</sup> The fact that the previous statute did not include this com-

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244. *People v. Coleman*, 882 N.E.2d 1025, 1029 (Ill. 2008).

245. Carol M. Bast, *What's Bugging You? Inconsistencies and Irrationalities of the Law of Eaves- dropping*, 47 DEPAUL L. REV. 837, 915 (1998).

246. *Coleman*, 882 N.E.2d at 1029; Monique Garcia, *Quinn Signs New Illinois Eavesdropping Rules into Law*, CHI. TRIB. (Dec. 30, 2014, 5:53 PM), <http://www.chicagotribune.com/news/ct-quinn-signs-illinois-eavesdropping-law-met-1231-20141230-story.html> ("Illinois' previous eavesdropping law was among the strictest in the nation, making it illegal to record anybody, even in public, without their permission.").

247. 720 ILL. COMP. STAT. 5/14-2(c) (2015).

248. 6 N.E.3d 154, 162 (Ill. 2014).

249. *Id.* at 158-159 (quoting 720 ILL. COMP. STAT. 5/14-2(a)(1)(A) (2015)).

250. *Id.* at 161; Michael Tarm, *Illinois Supreme Court Deals Final Blow To State's Harsh Eaves- dropping Law*, HUFF. POST (Mar. 20, 2014, 6:59 PM), [http://www.huffingtonpost.com/2014/03/20/illinois-eavesdropping-law\\_n\\_5003308.html](http://www.huffingtonpost.com/2014/03/20/illinois-eavesdropping-law_n_5003308.html).

251. *Clark*, 6 N.E.3d at 161; Tarm, *supra* note 250.

252. *Clark*, 6 N.E.3d at 161; *People v. Melongo*, 6 N.E.3d 120, 126 (Ill. 2014); Tarm, *supra* note 250.

mon component,<sup>253</sup> one that echoes *Katz* in some regard, indicates just how strict this statute once was.

Democratic Representative Elaine Nekritz spearheaded the campaign to revamp the existing statute.<sup>254</sup> The new language protects conversations with a “recognized reasonable expectation of privacy.”<sup>255</sup> Former Governor Quinn signed the amended law in December 2014, which went into effect in January 2015, to require all parties engaged in a private conversation to give consent before recording,<sup>256</sup> among other changes. Debate exists whether the amended law was mostly an effort to increase law enforcement accountability and expand citizen rights to record law enforcement officers,<sup>257</sup> which is likely a response to the recent events in Ferguson, Missouri, for example.

The new amendments actually grant greater latitude to law enforcement.<sup>258</sup> Critics fear this new wording will prompt law enforcement to seek an exemption from a State’s Attorney, not a judge, when dealing with certain crimes.<sup>259</sup> The Illinois ACLU, for example, initially welcomed the changes but also raised concerns that the new language gave more liberal authority to law enforcement to record conversations sans judicial warrants and thus did not support the final draft of the bill.<sup>260</sup>

These statutes, and Fourth Amendment case law, indicate how ShotSpotter may be analyzed in general before entering a courthouse, but can an attorney use the technology once inside the courtroom? The next subsection deals with this issue.

#### H. How Does ShotSpotter Data Fit in Criminal Trials?

ShotSpotter totes an impressive embarkation in criminal trials across the country in recent years. In upholding the use of ShotSpotter under the Fourth Amendment, courts in over a dozen states admitted

253. Tarm, *supra* note 250.

254. S. 1342, 98th Gen. Assemb., Spec. Sess. (Ill. 2014) (as amended by Rep. Elaine Nekritz), available at <http://www.ilga.gov/legislation/98/SB/PDF/09800SB1342ham006.pdf>; Thomas Halleck, *Illinois Passes Bill That Makes It Illegal to Record the Police*, INT’L BUS. TIMES (Dec. 9, 2014, 6:07 AM), <http://www.ibtimes.com/illinois-passes-bill-makes-it-illegal-record-police-1744724>.

255. Dan Johnson, *5 Things You Need to Know About Illinois New Eavesdropping Law*, HUFF. POST (Feb. 16, 2015, 5:59 AM), [http://www.huffingtonpost.com/dan-johnson/the-illinois-eavesdropping-law\\_b\\_6336984.html](http://www.huffingtonpost.com/dan-johnson/the-illinois-eavesdropping-law_b_6336984.html) [hereinafter *5 Things*].

256. S.1342 (as amended by Rep. Elaine Nekritz), available at <http://www.ilga.gov/legislation/98/SB/PDF/09800SB1342ham006.pdf>; Garcia, *supra* note 246.

257. See Dan Johnson, *Illinois New Eavesdropping Law is a Terrible Idea*, HUFF. POST (Feb. 10, 2015, 5:59 AM), [http://www.huffingtonpost.com/dan-johnson/illinois-to-recriminalize\\_b\\_6296916.html](http://www.huffingtonpost.com/dan-johnson/illinois-to-recriminalize_b_6296916.html); Kwame Raoul, *You Can Record Police in Illinois*, HUFF. POST (Feb. 16, 2015, 5:59 AM), [http://www.huffingtonpost.com/kwame-raoul/you-can-record-police-in\\_b\\_6335922.html](http://www.huffingtonpost.com/kwame-raoul/you-can-record-police-in_b_6335922.html).

258. *5 Things*, *supra* note 255.

259. Garcia, *supra* note 246 (“Officials previously needed judicial approval for such an exemption, which under the new law would not be required unless secret recording was needed for more than 24 hours.”).

260. *Eavesdropping Bills Passes in Illinois*, AM. CIV. LIBERTIES UNION OF ILL. (Dec. 5, 2014, 3:30 PM), <http://www.aclu-il.org/eavesdropping-bill-passes-in-illinois/>.

ShotSpotter evidence in trial<sup>261</sup> and even in Federal courts.<sup>262</sup> Counsel used data in over fifty cases and thousands of investigations.<sup>263</sup> These examples, however, deal with solely gunfire data. In the New Bedford situation described in the Part I, the District Attorney asserted that the conversation recording could be and should be admissible in trial.<sup>264</sup> Should both types of evidence, gunshot and other ambient noise, be admitted in trials?

### 1. *The Exclusionary Rule*

The exclusionary rule constitutes an important aspect of the Fourth Amendment that deals directly with admissible evidence. The exclusionary rule holds that evidence obtained through an illegal search or seizure will not necessarily render illegally seized evidence inadmissible in court.<sup>265</sup> Thus, the rule operates as a deterrent to unconstitutional police conduct.<sup>266</sup> Since this Note acknowledges that at the present time ShotSpotter technology remains constitutional in the absence of a ruling to the contrary, this rule may not come into play immediately. If ShotSpotter sensors pick up conversations, especially in private residences, then this Note argues that this rule should bar admissibility.

### 2. *Examples Across the Country*

As previously mentioned, ShotSpotter data solely relating to gunfire has shown up in numerous courtrooms across the country. *Thompson* illustrates how an Alabama district court believed ShotSpotter data was extremely reliable. In that case, ShotSpotter sensors logged five shots moving at five miles per hour.<sup>267</sup> The police responded to this data and saw the defendant's car driving away from the location ShotSpotter provided.<sup>268</sup> Witnesses at the scene corroborated and stated that the gunshots came from the defendant's car.<sup>269</sup> When the police stopped the defendant they noticed a gun in the defendant's vehicle; they used the ShotSpotter

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261. See *Pickford v. Janda*, No. 13-2686 PJH (PR), 2014 WL 3704874, at \*1 (N.D. Cal. July 21, 2014); *United States v. Smith*, No. 13-CR-136, 2014 WL 468002, at \*3 (E.D. Wis. Feb. 6, 2014); *U.S. v. Thompson*, CR. No. 2:10-cr-125-WHA, 2011 WL 1344192, at \*3 (M.D. Ala. Feb. 14, 2011); Showen, *supra* note 23. Some cities, like Saginaw, Michigan, are still experimenting with ShotSpotter in trials. Kurlyandchik, *supra* note 33 (“We’ve only had four or five major incidents where we’ve gone to court with ShotSpotter . . .”).

262. NATIONAL GUNFIRE INDEX 2013, *supra* note 57, at 4.

263. *Id.*; see also *Arnoldy*, *supra* note 178 (“Data from ShotSpotter has not yet been challenged in court, and both the company and defense attorneys predict an eventual showdown.”); *Knapp*, *supra* note 71 (noting that “ShotSpotter data has been used to obtain convictions in several cases”).

264. *Goode*, *supra* note 3; *Stanley*, *supra* note 133.

265. See generally *United States v. Leon*, 468 U.S. 897 (1984).

266. See, e.g., *id.* at 910 (“Standing to invoke the rule has thus been limited to cases in which the prosecution seeks to use the fruits of an illegal search or seizure against the victim of police misconduct.”).

267. *United States v. Thompson*, CR. No. 2:10-cr-125-WHA, 2011 WL 1344192, at \*1 (M.D. Ala. Feb. 14, 2011).

268. *Id.*

269. *Id.* at \*2.

data to show they had “reasonable suspicion or probable cause” to search the car.<sup>270</sup> The court stated that it was immaterial that the police officer did not actually hear the gunshots and instead depended on ShotSpotter.<sup>271</sup> The court held that the defendant’s Fourth Amendment rights were not violated.<sup>272</sup>

Additionally, in Saginaw, Michigan, ShotSpotter led law enforcement to critical evidence in the murder of Elizabeth Taybron.<sup>273</sup> During trial, the judge allowed ShotSpotter data to enter a homicide trial for nineteen-year-old Donte Houston, who was charged with shooting into an intersection that resulted in the accidental death of the seventy-year-old woman.<sup>274</sup> The defense argued that this is a novel practice in Michigan and doubted the system’s reliability and the accuracy of the data interpretation.<sup>275</sup> Furthermore, and similarly to the scenario described in Part I, just one year before this incident, prosecutors in Michigan used ShotSpotter audio recordings to support their claim that the two defendants robbed an individual for his belongings at gunpoint.<sup>276</sup>

Yet, ShotSpotter does not sail through courtrooms without red flags. In August 2014, the Nebraska Supreme Court affirmed the first murder conviction in the state that resulted from ShotSpotter data.<sup>277</sup> The defendant, however, objected to the technology’s admissibility and raised concerns about the system’s accuracy and the subjectivity of ShotSpotter employees during the review process.<sup>278</sup> The defense counsel also highlighted concerns that this situation, where evolving technology was unquestionably admissible, is rare.<sup>279</sup> While the technology may be novel and some still question its accuracy, however, ShotSpotter data can still aid prosecutors by leading police officers to shell casings to better identify the weapon used, which, in turn, may identify the shooter.<sup>280</sup> This practice, coupled with unparalleled accuracy and results, presents compelling arguments to dispel any notions of an Orwellian<sup>281</sup> technology.

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270. *Id.* at \*1–2.

271. *Id.* at \*3.

272. *Id.* at \*5.

273. Kurlyandchik, *supra* note 33.

274. Tom Plahutnik, *Judge Allows ‘ShotSpotter’ as Evidence in Murder Trial*, WNEM.COM (Feb. 21, 2012, 10:53 AM), <http://www.wnem.com/story/16588797/judge-allows-shotspotter-as-evidence-in-murder-trial?clienttype=printable>.

275. *Saginaw Murder Trial*, *supra* note 62.

276. Plahutnik, *supra* note 274; *see also* Andy Hoag, *Saginaw Murder Suspect’s Attorney Wants ShotSpotter Evidence Barred from Trial*, MLIVE.COM (Oct. 12, 2011, 9:35 AM) (“The judge last year allowed ShotSpotter evidence in the trial against Gregory M. Ashworth, also known as ‘Lil’ Chucky,’ and Jason T. Tarver, also known as ‘Lil’ Purp.’ The recordings showed that Ashworth unloaded all six bullets from his revolver exactly where a witness testified he did.”).

277. Martha Stoddard, *High Court Upholds ShotSpotter-Supported Murder Conviction*, OMAHA WORLD HERALD (Aug. 8, 2014, 11:45 AM), [http://www.omaha.com/news/crime/high-court-upholds-shotspotter-supported-murder-conviction/article\\_654ca794-be67-5ca4-8e93-36f0c3d20d82.html](http://www.omaha.com/news/crime/high-court-upholds-shotspotter-supported-murder-conviction/article_654ca794-be67-5ca4-8e93-36f0c3d20d82.html).

278. *Id.*

279. *Id.*

280. NATIONAL GUNFIRE INDEX 2013, *supra* note 57, at 5.

281. Benjamin, *supra* note 101, at 1 (“While these technologies on first impression seem like legitimate law enforcement tools, they could quickly become Orwellian ears and eyes-telescreens made for monitoring our public spaces.”).

## III. ANALYSIS

If ShotSpotter sensors were technologically incapable of listening in on human conversations, then perhaps the Fourth Amendment concerns would be negligible and the crime-fighting benefits would substantially alter the analysis.<sup>282</sup> Indeed, in ShotSpotter's perfect world "a gun goes off, microphones [hear] it, pinpoints where the shot came from, officers rush to the scene, make an arrest, and there's one more gun off the street."<sup>283</sup>

Yet, it is evident that there is more to ShotSpotter than meets the eyes and, more importantly, ears. Many people more or less accept the notion that security cameras record their behavior in public places, but the idea that "someone or something could be listening—even in the limited way described by the company—is a far newer concept."<sup>284</sup> Thus, the technology should be analyzed under current Fourth Amendment frameworks to adequately address future problems.

ShotSpotter's key defense to any Fourth Amendment allegation is that it detects "things that go bang," rather than intending to pick up conversations or looking for personal identification information.<sup>285</sup> The company promises the technology cannot hear conversations at normal decibels.<sup>286</sup> Police echo this defense.<sup>287</sup> Moreover, conversations in public places do not permit an expectation of privacy.<sup>288</sup> This Note fears, however, that future uses of the technology prove more objectionable. The verdict on ShotSpotter technology will rest with the framework adopted.

The following sections will dissect the *Katz* framework and how *Katz* fails to adequately deal with ShotSpotter data. Additionally, this analysis will cover the possible benefits inherent in *Kyllo* and *Jones* and their shortcomings. Then this analysis will conclude by addressing the aforementioned statutory examples as well as quandaries relating to evidence admissibility in trial.

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282. *ShotSpotter is an Appropriate Tool*, *supra* note 27.

283. Linda Thomas, *Spy Technology Could Trace Seattle Gunfire*, MYNORTHWEST.COM (June 6, 2012, 2:31 AM), <http://mynorthwest.com/646/688719/New-spy-technology-could-trace-gunfire-in-Seattle>.

284. *ShotSpotter is an Appropriate Tool*, *supra* note 27.

285. Buckley, *supra* note 49; Martinez, *supra* note 48, at 204–05; *see also* Knapp, *supra* note 71 (noting that "this is a passive technology. We refer to them as sensors rather than microphones because it's important distinction."). CEO Ralph Clark professed that the sensors do not usually detect "ambient noise" as the sensors are thirty feet above the ground, and, furthermore, if the sensors do not detect gunfire "within a five-hour period, the data is recorded over." Chen, *supra* note 140.

286. *ShotSpotter is an Appropriate Tool*, *supra* note 27.

287. *Id.*

288. Goode, *supra* note 3; *see also* Benjamin, *supra* note 101, at n.7 ("Someone who's shooting a gun in the air, from our perspective, has given up their right to privacy.").

A. *The Unworkable Katz Framework and ShotSpotter*

Many view *Katz* as an expansion, not a transmutation, of the perimeter of Fourth Amendment jurisprudence.<sup>289</sup> *Katz* does not hold all electronic surveillance techniques to be unconstitutional, and, as mentioned previously, employs a “reasonable expectation of privacy” test. Some opine that *Katz* is the best approach for emerging technologies, which would encompass ShotSpotter.<sup>290</sup> Scholars believe *Katz*’s framework may be the more “rational and coherent framework for courts to follow in determining whether or not a ‘search’ has occurred.”<sup>291</sup> Perhaps this is so because the test favors individuals, and privacy norms are in a constant flux with emerging technologies. Some have argued for an even more subjective framework that mirrors a “reasonable man” test where courts consider the tone of the individual’s voice,<sup>292</sup> for example.

Yet, while *Katz* serves as a critical decision in Fourth Amendment jurisprudence,<sup>293</sup> many scholars and courts alike have criticized the decision as an imprecise framework that provides little guidance for lower courts going forward.<sup>294</sup> Scholars note that existing “reasonable expectation of privacy” Supreme Court cases are “a failure.”<sup>295</sup> Professor Wayne LaFave opined that *Katz*’s framework “does not produce ‘clarity where theretofore there had been uncertainty. If anything, the exact opposite has occurred.’”<sup>296</sup>

Moreover, potential subterfuge dangers exist within a malleable, reasonable person standard like the one pronounced in *Katz*. More conservative courts may lower the threshold for a reasonable expectation, for example.<sup>297</sup> This framework is also susceptible to political exploitation and seduction.<sup>298</sup> In fact, subsequent decisions appear to modify *Katz* in manners that do not preserve individual privacy rights under the Fourth Amendment.<sup>299</sup>

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289. Maclin, *supra* note 161, at 55.

290. Simmons, *supra* note 154, at 719 (“For the most part, *Katz*’s treatment of virtual surveillance by emerging technologies provides a rational and coherent framework for courts to follow in determining whether or not a ‘search’ has occurred.”).

291. *Id.*

292. Harvey A. Schneider, *Katz v. United States: The Untold Story*, 40 MCGEORGE L. REV. 13, 21 (2009) (“[A] court should examine three criteria, none of which are individually dispositive: the tone of voice utilized by the person whose communication was intercepted, the physical location at which the conversation took place, and the activities of the law enforcement officers who made the interception.”).

293. Arbus, *supra* note 201, at 1737.

294. *Id.* at 1731–32.

295. Kerr, *supra* note 158, at 505.

296. Maclin, *supra* note 161, at 88.

297. Aya Gruber, *Garbage Pails and Puppy Dog Tails: Is That What Katz is Made Of?*, 41 U.C. DAVIS L. REV. 781, 781 (2008).

298. *Id.* at 791.

299. Arbus, *supra* note 201, at 1732; *see also* McAllister, *supra* note 175, at 477 (“[A]nalogies to prior ‘search’ cases . . . are so far removed from the new forms of surveillance that analogies to them only confuse, rather than clarify, the actual analysis required by *Katz*.”).

The *Katz* framework contains several other specific problems, which make it ill equipped and improper for addressing ShotSpotter, or most modern technology for that matter. First, while *Katz* denounced the “constitutionally protected area” framework from prior cases, the decision did not clarify when the Fourth Amendment should be implemented.<sup>300</sup> The resulting case-specific inquiry would prompt ever-changing and uncertain boundaries for courts addressing ShotSpotter data. The Fourth Amendment should be employed any time ShotSpotter sensors detect more than gunfire.

Second, *Katz* “failed to direct judges to evaluate the term ‘search’ based on contextual and evolving privacy norms.”<sup>301</sup> Consequentially, this will lead to subjective interpretations on what is a “search” and what information is private. Arguably, intrusive technology is more commonplace in today’s society than it was during the *Katz* Court, and therefore perhaps ShotSpotter may not be completely outrageous in contemporary views of privacy.

Third, the language appears to link privacy protection with “precautionary behavior.”<sup>302</sup> Following this logic, by extension, the Court impractically assumes all individuals walking down the street will take every precautionary measure to ensure their privacy in their day-to-day activities.<sup>303</sup> Will people be mindful of their surroundings, especially with hidden sensors, and abstain from speaking about certain topics outside the confines of their homes? Should they resort to these measures? Certainly not.

Fourth, the justices in the majority did not agree on the boundaries of their holding, and although *Katz* has deep-seated impact on Fourth Amendment jurisprudence, this disagreement reduces any true potential long lasting contribution.<sup>304</sup> *Katz*’s flexibility may actually be its downfall.<sup>305</sup> The holding appears unable to supersede cases about “wiretapping or electronic bugging of private conversations.”<sup>306</sup> ShotSpotter, arguably, goes beyond these measures to some extent given its gunfire detection attributes. Thus, if *Katz* were the chosen framework it would likely not be applied rigorously to ShotSpotter anyways.

Fifth, the Court’s framework indicates that individuals whose sole aim is to defeat privacy to promote their own interests will determine reasonable expectations of privacy.<sup>307</sup> For example, the police will use this

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300. Arbus, *supra* note 201, at 1737.

301. Luke M. Milligan, *Concreteness Drift and the Fourth Amendment*, 82 *Miss. L.J.* 891, 892 (2013).

302. Gruber, *supra* note 297, at 791.

303. *See id.* at 793.

304. Maclin, *supra* note 161, at 89.

305. Gruber, *supra* note 297, at 791. *But see id.* at 828 (“*Katz*’s very fundamental flaw also embodies its most glorious promise for liberation. Reasonableness is the mechanism through which the Fourth Amendment can be a fluid protector of rights, rather than an outmoded relic tethered to no-longer-sufficient categories.”).

306. Maclin, *supra* note 161, at 89.

307. Gruber, *supra* note 297, at 781.

technology to their advantage and they will dictate what is private in what situations to further their goals. ShotSpotter data may be placed discriminately in areas that produce the highest gunfire reports, which may disproportionately subject lower economic classes and minorities to the technology.<sup>308</sup> At this juncture, the Supreme Court has yet to discuss the Equal Protection ramifications in this type of situation. Whose reasonable expectation of privacy is it? Is it the citizens in these specific locations or is it the individuals implementing and installing the technology?

Justice Alito's concurrence in *Jones* uncovers several other issues with *Katz*, one being that "society's anticipations of privacy are based on assumptions about police resources, and new technology upsets those assumptions."<sup>309</sup> Before *Jones*, the general public did not anticipate that police would use GPS tracking in such a way, but now the case has demonstrated that it may be the more financially conservative and efficient method.<sup>310</sup> Arguably, audio and video surveillance techniques have the ability to be as intrusive as GPS tracking methods like the one used in *Jones*. Under this view, however, the general public probably assumes they have limited privacy in public places and therefore this behavior would not amount to a "search" for Fourth Amendment purposes under *Katz*.<sup>311</sup>

Additionally, Justice Alito, in his *Jones* concurrence, opined:

[T]he *Katz* test rests on the assumption that this hypothetical reasonable person has a well-developed and stable set of privacy expectations. But technology can change those expectations. Dramatic technological change may lead to periods in which popular expectations are in flux and may ultimately produce significant changes in popular attitudes. New technology may provide increased convenience or security at the expense of privacy, and many people may find the tradeoff worthwhile. And even if the public does not welcome the diminution of privacy that new technology entails, they may eventually reconcile themselves to this development as inevitable.<sup>312</sup>

Justice Alito also discussed how *Katz* and new methods of surveillance spawned legislation to protect privacy rights with regards to wiretapping.<sup>313</sup> Congress took charge at this point to remove Fourth Amendment wiretap protection from the responsibility of the courts to more comprehensive statutes,<sup>314</sup> such as Title III.

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308. See generally William J. Stuntz, *The Distribution of Fourth Amendment Privacy*, 67 GEO. WASH. L. REV. 1265 (1999); see also *OPD ShotSpotter*, *supra* note 68 (ShotSpotter is employed heavily in "the poorer, colored, densest residential areas . . .").

309. Siegel & Hadley, *supra* note 221, at 7.

310. *Id.*

311. *Id.*

312. *United States v. Jones*, 132 S. Ct. 945, 962 (2012).

313. *Id.* at 963.

314. *Id.* at 962–63.

If ShotSpotter were to be analyzed under *Katz*, a court's decision would likely mirror the following analysis. The shooters in New Bedford likely had no reasonable expectation of privacy while shouting at one another on the street in the early hours of the morning. Since cities place ShotSpotter sensors outside on buildings and utility poles,<sup>315</sup> arguably there is no true expectation of privacy. There seems to be no protection for victims of electronic eavesdropping in purely public places, like a street or public parks.<sup>316</sup> The District Attorney in the New Bedford case echoed this sentiment.<sup>317</sup> If the sensors were to detect conversations through building walls in private bedrooms, offices, or even in private vehicles, however, the analysis would substantially change and a warrant would be necessary.<sup>318</sup> Yet, would a reasonable person assume gunfire detection sensors could also record their conversation? If the Court had instead embraced Justice Black's viewpoint, then perhaps ShotSpotter escapes scrutiny free and clear.<sup>319</sup>

Evidently, the *Katz* framework is significantly flawed in many regards and the analysis applied to ShotSpotter may leave citizens vulnerable in ways that do not comport with the Fourth Amendment. Other, less objectionable frameworks exist and this Note now turns to those alternatives while also acknowledging their respective shortcomings.

### B. *Kyllo and Jones: Different Concerns, Better Frameworks*

*Kyllo*, like *Katz*, can also be considered an expansion of Fourth Amendment limitations.<sup>320</sup> Moreover, like *Katz*, *Kyllo* does not inhibit police departments from utilizing other methods of technological surveillance that are helpful to their goals.<sup>321</sup> *Kyllo* rests on common law as the baseline for an individual's privacy rights,<sup>322</sup> but the common law is constantly ebbing and flowing, and common law courts likely could not have envisioned technology like ShotSpotter would ever exist.<sup>323</sup> Thus, a common law approach may be inherently flawed in light of modern technology. *Kyllo* may also be constrained as the holding "conflicts with key aspects of search and seizure law that currently permit technological and other sense-enhancing instruments to be used to gather information about 'the most intimate details of a person's life.'"<sup>324</sup> Moreover, *Kyllo*

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315. Goode, *supra* note 3.

316. Benjamin, *supra* note 101, at 9.

317. Fraga, *supra* note 1 ("There is no expectation of privacy on the street when you're outside yelling on a public street. I don't see how you can have an expectation of privacy . . .").

318. See *Kyllo v. United States*, 533 U.S. 27, 40 (2001).

319. See *supra* notes 188–95 and accompanying text.

320. Maclin, *supra* note 161, at 123.

321. *Id.* at 58.

322. *Kyllo*, 533 U.S. at 34 ("[T]here is a ready criterion, with roots deep in the common law, of the minimal expectation of privacy that exists, and that is acknowledged to be *reasonable*.").

323. Seamon, *supra* note 206, at 25.

324. Maclin, *supra* note 161, at 106.

may be limited to cases with similar facts and technology; thus, the future impact of this case is questionable.<sup>325</sup>

Yet, *Kyllo* is not entirely problematic if applied to ShotSpotter technology. *Kyllo* focused on technology intruding into one's private home,<sup>326</sup> and although ShotSpotter sensors are not created nor located to specifically listen into homes, a case may potentially arise where a sensor detects such a conversation. Under a *Kyllo* analysis, presently, cities using ShotSpotter are arguably using a device that is not "in general public use."<sup>327</sup> This might change if every state or the majority of local governments adopted the technology.

Moreover, *Kyllo* seems to imply that if ShotSpotter sensors detected information that would be impossible to obtain without physical intrusion, then the detection amounts to a "search" and, therefore, necessitates a warrant.<sup>328</sup> This analysis would comport with future situations that may arise if ShotSpotter sensors record more and more conversations. A possible downside under this analysis, at least in the eyes of local law enforcement, is that securing warrants for ShotSpotter is problematic. One would have to obtain a warrant from all homes in the sensor's area and that can be inefficient, time-consuming, and may decrease community trust.<sup>329</sup> Requiring a warrant may inhibit the social gains of the technology, but would allow ShotSpotter to comply with *Kyllo* and fend off potential constitutional concerns.<sup>330</sup>

Some scholars believe acoustic technology like ShotSpotter will sail through courtrooms bypassing any Fourth Amendment concerns,<sup>331</sup> partially because they believe the technology is seemingly unlike *Kyllo*'s thermal imaging as it does not enhance human senses; the sensors are ubiquitous, and "readily available to the public."<sup>332</sup> Moreover, if the government can legally go somewhere and see illegal conduct, then no Fourth Amendment violation will occur.<sup>333</sup> Yet, ShotSpotter does possess qualities that enhance human senses. For example, one account in Boston stated that ShotSpotter works as the police's "ears" and the corresponding video surveillance cameras were their "eyes."<sup>334</sup> Therefore, this Note postures that ShotSpotter cannot be a guaranteed green light like some may think, given the undeniable enhancing capabilities and haphazard analyses of the Fourth Amendment.

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325. *Id.* at 123.

326. *Kyllo*, 533 U.S. at 27.

327. *Id.* at 40.

328. *Id.*

329. *See id.*

330. *Id.*

331. MCINNIS, *supra* note 50, at 268.

332. *Id.*

333. *Id.*

334. Alysha Palumbo, *Cameras, GPS Technology Help Boston Police Combat Crime*, NECN (Feb. 27, 2014, 5:01 PM), [http://www.necn.com/news/new-england/\\_NECN\\_Cameras\\_GPS\\_Technology\\_Help\\_Boston\\_Police\\_Combat\\_Crime\\_NECN-247633921.html](http://www.necn.com/news/new-england/_NECN_Cameras_GPS_Technology_Help_Boston_Police_Combat_Crime_NECN-247633921.html).

*Jones* seemingly does not provide any greater clarity. If anything, some scholars have postulated, *Jones* “exposes the inconsistencies regarding the Fourth Amendment and advancing technology.”<sup>335</sup> One major flaw is that *Jones* majority did not acknowledge privacy violations that occur without a physical intrusion, a critical component of the case, and the concurrences only mentioned this problem but failed to provide any resolution.<sup>336</sup> Justice Scalia’s preoccupation with the physical trespass in *Jones* resulted in neglect regarding Jones’s reasonable expectations to privacy.<sup>337</sup> This fixation resulted in an unnecessarily constrained, vague, and weak opinion regarding emerging technologies.<sup>338</sup> *Jones* “did not even attempt to address how such use of ubiquitous-presence technologies in law enforcement could implicate Fourth Amendment rights.”<sup>339</sup> *Jones*, in effect, returned to the *Olmstead* era where physical trespass formed the basis for privacy violations under the Fourth Amendment.<sup>340</sup> *Jones* reduced *Katz*’s fortress and “[laid] bare the privacy of citizens under new technologies that do not require trespass.”<sup>341</sup>

Arguably, Justice Alito’s concurrence in *Jones* could revamp the Fourth Amendment.<sup>342</sup> Justice Alito’s opinion contains tinges of a “reasonableness” element in terms of foreseeability of degree of invasion. Justice Alito acknowledged that the majority did not use the *Katz* framework appropriately and urged that a physical intrusion is neither imperative nor copacetic to comprise a Fourth Amendment infringement under the *Katz* approach.<sup>343</sup> But instead of proffering solutions to these concerns, he merely offered that a legislative avenue was preferable.<sup>344</sup>

These concerns aside, ShotSpotter may be more comparable to GPS tracking in *Jones* where there seems to be monitoring around the clock. The law enforcement officers in *Jones* were able to monitor Jones at all hours, which they could not have done otherwise unless they physically followed Jones in their own vehicle.<sup>345</sup> Under Justice Alito’s concurrence, if a reasonable person would not have envisioned such intrusion, then that factors into the analysis. Moreover, ShotSpotter is unlike short-term monitoring on public streets and therefore any conversations detected, under Justice Alito’s rationale, curve away from what may be reasonable in society’s eyes and therefore indicate a search.

This section exposed the various fallacies inherent in *Katz*, *Kyllo*, and *Jones* if they were to apply to ShotSpotter; of the three frameworks, *Kyllo* and *Jones* are the least objectionable. This section now turns to-

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335. Morris, *supra* note 234, at 513.

336. *Id.*

337. Iyengar, *supra* note 227, at 336.

338. *Id.*

339. *Id.* at 345.

340. Hampton, *supra* note 176, at 166.

341. Iyengar, *supra* note 227, at 341.

342. See *supra* notes 221–28 and accompanying text.

343. Iyengar, *supra* note 227, at 337.

344. Morris, *supra* note 234, at 500–01.

345. United States v. Jones, 132 S. Ct. 945, 948 (2012).

ward a futuristic vantage point for other possible frameworks and practical lower court applications.

### C. *Into the Judicial Future*

In general, courts now increasingly waive Fourth Amendment concerns for “virtual or electronic trespasses.”<sup>346</sup> Perhaps this is due to post-September 11 fears of terrorism and spikes in crime across the country.<sup>347</sup> Evidently, the Fourth Amendment analyses will depend greatly on the leadership of the Supreme Court, and, plausibly, terrorism and crime fears facing the Roberts Court may greatly impact the Court’s response to emerging technologies under the Fourth Amendment.<sup>348</sup> So far, the Roberts Court appears to construe the Fourth Amendment in the government’s favor under a reasonableness approach.<sup>349</sup> But what about other approaches and what have the lower courts achieved thus far?

#### 1. *Multiple Models: A Possibility or Another Evasion?*

Scholar Orin S. Kerr opined that the Supreme Court is incapable of designing one framework to encompass all Fourth Amendment cases and what makes a “reasonable expectation of privacy.”<sup>350</sup> He noted that “no one test can accurately and consistently distinguish less troublesome police practices that do not require Fourth Amendment oversight from more troublesome police practices that are reasonable only if the police have a warrant or compelling circumstances.”<sup>351</sup> Kerr provided four possible frameworks and argued that courts can use them in combination to weave around complicated fact patterns.

Kerr argued that court determined proxies for police regulation are not the correct course given that police department practices are too varied and it is impractical and improbable to find an appropriate benchmark.<sup>352</sup> An approach that focuses on specific practices fares no better, according to Kerr, as decentralized lower courts will not apply this standard consistently.<sup>353</sup>

Kerr’s fourth model, the policy model, seems to comport with the Court’s rulings in *Katz* and *Kyllo* and forms the underpinnings of this Note’s recommendation discussed in the next section. This model assists in delineating the elemental objectives of Fourth Amendment jurisprudence as well as the “reasonable expectation of privacy test.”<sup>354</sup> Kerr states that the policy model has not been defeated thus far in cases be-

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346. Medinger, *supra* note 229, at 435.

347. MCINNIS, *supra* note 50, at 271.

348. *Id.*

349. *Id.*

350. See Kerr, *supra* note 158.

351. *Id.* at 503.

352. *Id.* at 506.

353. *Id.*

354. *Id.* at 519.

fore the Supreme Court.<sup>355</sup> This “direct approach . . . focus[es] directly on whether the police practice should be regulated by the Fourth Amendment.”<sup>356</sup> Under this model, if a lack of regulation results in civil liberties impairment, then the action harms a citizen’s reasonable expectation of privacy.<sup>357</sup> If a judge were to follow this approach, he or she must weigh the specific ramifications of regulation, individuals’ privacy and security, and choose the better route.<sup>358</sup>

Kerr opined that his “multiple models” approach is superior in that “it facilitates a decentralized Fourth Amendment in which different models apply in different settings depending on which model best identifies practices in need of constitutional regulation in that setting.”<sup>359</sup> He noted that lower courts could implement different models based on the specific facts of each case.<sup>360</sup> Yet, Kerr’s approach, while scholarly and possibly viable for other technologies, is unnecessarily complicated and does not give the clarity necessary for ShotSpotter cases. Kerr’s model might result in varying conclusions in different jurisdictions.

## 2. *Lower Court Analogies and Similar Technologies*

Given that previous frameworks cause more headaches than satisfaction, district courts may rise to the occasion to patch-up *Jones*’s most recent handiwork if the Supreme Court cannot sort out their mess. Yet, this route may produce differing approaches and conclusions further creating an air of confusion. This Note opines that looking to similarly intrusive technologies may help to provide a general framework as courts may be starting at square one, so to speak, and may help mitigate the aforementioned framework concern.

Some lower courts are facing these conundrums for the first time, resulting in intriguing holdings.<sup>361</sup> Some honed in on the *Jones* approach that focused on physical trespass and property law when addressing emerging technologies.<sup>362</sup> Courts following this approach dismiss Fourth Amendment claims when the police capture evidence through the use of emerging technologies.<sup>363</sup> For example, in *State v. Bailey*, the court dealt with video surveillance that observed the defendant’s property, which would be a Fourth Amendment violation via *Jones*.<sup>364</sup> The court ultimately declined this reasoning since the video surveillance did not allow the police to physically intrude on the defendant’s property, violate his per-

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355. *Id.* at 522.

356. *Id.* at 506.

357. *Id.* at 519.

358. *Id.*

359. *Id.* at 507.

360. *Id.*

361. Medinger, *supra* note 229, at 399.

362. *Id.* at 435.

363. *Id.* at 434.

364. *State v. Bailey*, No. 0009007758, 2012 WL 3655243, at \*1 (Del. Super. Ct. July 20, 2012); Medinger, *supra* note 229, at 435.

sonal space within his property, or follow him like a GPS tracking device.<sup>365</sup> This could be a lucrative approach for those supporting ShotSpotter.

Another potentially relatable case to ShotSpotter is *United States v. Nowka*, where a government agency hired a third party to install camera surveillance on utility poles near the defendant's property.<sup>366</sup> The court again acknowledged that the cameras did not physically trespass onto the defendant's property as they are secured to the utility poles.<sup>367</sup> Moreover, the court made a distinction that what the camera obtained is visible to all individuals who could be nearby on the sidewalk.<sup>368</sup> Thus, the court held the camera did not retrieve unlawful evidence.<sup>369</sup> Granted, video and audio surveillance are remarkably different. Nevertheless, these cases demonstrate how courts are dealing with different emerging technologies and other courts have also followed this approach.<sup>370</sup>

Lower courts, while the first pawns to move in this Fourth Amendment game, are addressing emerging technologies frequently but they will continue to flounder without proper guidance from the Supreme Court. Therefore, this Note now turns toward other protections, in the form of the aforementioned federal and state statutes, to seek alternative solutions.

#### D. *ShotSpotter Under the Omnibus Act and the Illinois Eavesdropping Statute*

Fourth Amendment concerns aside, ShotSpotter may still run afoul of federal and state statutes in the future. This Note works under the impression that ShotSpotter sensors can pick up conversations whether intentionally or not. This ability essentially turns the sensors into audio devices. Presently, ShotSpotter could slip through loopholes in these statutes by reiterating their defense that their sensors are "not designed primarily for interception."<sup>371</sup> But what happens when more incidents occur and more questions surface about ShotSpotter's primary purpose?

At this juncture, ShotSpotter fails to conform to Title III's specific procedure to make legal communication interceptions.<sup>372</sup> Therefore, when ShotSpotter's loopholes close up, the technology could face serious

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365. Medinger, *supra* note 229, at 435.

366. No. 5:11-CR-00474-VEH-HGD, 2012 WL 2862139, at \*4 (N.D. Ala. May 14, 2012); Medinger, *supra* note 229, at 436.

367. *Nowka*, 2012 WL 2862139, at \*4; Medinger, *supra* note 229, at 436.

368. *Nowka*, 2012 WL 2862139, at \*4; Medinger, *supra* note 229, at 436.

369. *Nowka*, 2012 WL 2862139, at \*9; Medinger, *supra* note 229, at 436.

370. See *United States v. Anderson-Bagshaw*, No. 1:11-CR-257, 2012 WL 774964, at \*1 (N.D. Ohio Mar. 8, 2012); *United States v. Brooks*, 911 F. Supp. 2d 836, 837 (D. Ariz. 2012). Yet, it is worth noting in these cases "courts also considered arguments made by the defendants that echoed the arguments by Justices Sotomayor and Alito that, at some point, 24/7 surveillance might be so pervasive that it triggers Fourth Amendment concerns." Medinger, *supra* note 229, at 437.

371. 720 ILL. COMP. STAT. 5/14-2(a)(2) (2014).

372. Omnibus Crime Control and Safe Streets Act of 1968, Pub. L. No. 90-351, 82 STAT. 197, § 2518 (1968).

statutory violations. Aggrieved citizens could possibly file a civil cause of action against the local government if their voices were recorded through ShotSpotter.<sup>373</sup> ShotSpotter and local governments, however, could argue that their sensors contain evidence that connects to murder or other crimes that endanger one's life or limbs.<sup>374</sup> Yet, the statute still seems to require the government to communicate with the court or Attorney General to obtain permission and only for a specified amount of time.<sup>375</sup>

With regards to the Illinois Eavesdropping Statute, the statute also describes exemptions that require prior approval from the State's Attorney,<sup>376</sup> and it appears that ShotSpotter may not conform either. The new language of the Illinois Eavesdropping Statute seems to more forgiving and gives more flexibility to law enforcement, which would undermine concerns of ShotSpotter unconstitutionality even if the technology continued to record human conversations. ShotSpotter and their clients, however, are best served by tailoring their technology and law enforcement procedures to follow these statutes.

Presently, ShotSpotter will likely survive claims under either statute, given their leniency towards law enforcement. As the sensors pick up more conversations, however, the situation will change. Cities will need to obtain a warrant for specific crimes and this Note postulates that this will be difficult to do. The sensors operate like hyper-intrusive searches<sup>377</sup> and cities may find it difficult to keep the technology in light of the civil liberty concerns.

Constitutionality and statutory violations, however, are only part of the puzzle. This section indicated that federal and state statutes might trip up the technology going forward. This Note now addresses how to get the data into evidence, given that the technology remains legal at this time.

### *E. Admissibility*

As a preliminary matter, if a court deems a search to be "unreasonable," any evidence resulting from the search is usually excluded at trial as a means of deterrence towards that type of police behavior.<sup>378</sup> Various courts tested ShotSpotter admissibility in recent years, but no elucidated standard exists. This section will discuss the various hurdles ShotSpotter is likely to encounter in the courtroom.

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373. *Id.* § 2520.

374. *Id.* § 2516(2).

375. *Id.* § 2518.

376. 720 ILL. COMP. STAT. 5/14-3 (2015).

377. *See supra* notes 167-69 and accompanying text.

378. Hampton, *supra* note 176, at 168.

### 1. *Frye Hearings*

Although the Federal Rules of Evidence will cover most admissibility questions,<sup>379</sup> some states, such as Minnesota and Illinois, conduct *Frye*<sup>380</sup> hearings for questions of admissibility for “scientific evidence.” To satisfy this standard, the evidence in question must be “generally accepted and considered reliable by the relevant scientific community in order to be admissible.”<sup>381</sup> This test applies even if criminal prosecutions have continually used the technology for a significant number of years; a court must render an opinion on the matter.<sup>382</sup> This hearing can also occur when reliability doubts arise as to the results of the technology.<sup>383</sup> As the cited memorandum of law points out, ShotSpotter’s fate in terms of admissible evidence still lies in the hands of a court.<sup>384</sup>

This Note asserts that under a *Frye* hearing, ShotSpotter may survive scrutiny as the aforementioned data suggests that ShotSpotter accuracy is incomparable and the fact that many cities have adopted the technology speaks volumes to its “generally accepted” nature.<sup>385</sup> Arguably, there are still insufficient studies regarding ShotSpotter<sup>386</sup> so this may provide ammunition for those parties arguing against its admissibility. Yet, this Note believes that in general, ShotSpotter data simply recording gunfire should be admissible in a jurisdiction that holds a *Frye* hearing.

### 2. *One Attorney’s Tale with Frye and ShotSpotter*

One potential roadblock is the lack of a specified procedure for admitting the data as well as communication mishaps through the company. One trial account, by New York Public Defender Jill Paperno, illustrates the frustrations counsel may encounter with ShotSpotter data from a procedural standpoint under *Frye*.<sup>387</sup> Paperno initially obtained ShotSpotter data for the incident in her Rochester, New York, trial through *subpoena duces tecum*.<sup>388</sup> She contacted ShotSpotter and received documents that lacked “sufficient certification for admissibility or accurate infor-

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379. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993).

380. *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).

381. Defendant’s Memorandum of Law in Support of Motion for Frye-Mack Hearing at 2, *State v. Hayes*, 826 N.W.2d 799 (Minn. 2013) (No. 27-CR-10-45970), 2011 WL 10953653, at \*1; *see also* Hoag, *supra* note 276 (“The prosecution has ‘not established that this technology is generally accepted in the scientific community,’ Rupp wrote, adding the prosecution has not demonstrated that the technology is ‘reliable’ or ‘working properly’ or that ‘the results have been interpreted correctly.’”).

382. Defendant’s Memorandum of Law in Support of Motion for Frye-Mack Hearing, *supra* note 381, at 2.

383. *Id.*

384. *Id.* at 3.

385. *See supra* note 35 and accompanying text.

386. *See supra* notes 91, 99 and accompanying text.

387. Jill Paperno, *ShotSpotter – Now You See It, Now You Don’t*, N.Y. CRIM. DEF. BLOG (Sept. 11, 2013, 9:57 PM), [http://newyorkcriminaldefense.blogspot.com/2013/09/shotspotter-now-you-see-it-now-you-dont\\_11.html](http://newyorkcriminaldefense.blogspot.com/2013/09/shotspotter-now-you-see-it-now-you-dont_11.html).

388. *Id.*

mation about who to contact to get the evidence in at trial.”<sup>389</sup> When contacted, ShotSpotter claimed it did not “own” the technology nor did it hold the Rochester reports and therefore they could not lay the necessary foundation to allow the data in Paperno’s trial.<sup>390</sup> This assertion actually contradicts their Service and License Agreement.<sup>391</sup>

According to ShotSpotter, the City had the power.<sup>392</sup> Paperno followed up with the City and an individual claimed he could lay the necessary foundation and has done so in past trials.<sup>393</sup> ShotSpotter told Paperno that the local police could also lay the foundation.<sup>394</sup> Later, Paperno discovered this information to be false and ShotSpotter did not respond to her renewed communications.<sup>395</sup> The local police claimed only ShotSpotter could lay the foundation and eventually Paperno believed this to be true, as the police were not as technologically savvy.<sup>396</sup>

According to Paperno, when trying to admit ShotSpotter evidence in trial, an attorney should do the following: 1) reach out to ShotSpotter to see if they have the records; 2) identify necessary persons to subpoena; 3) subpoena well in advance; 4) if there is no response attempt to retain a ShotSpotter witness; and 5) research other states’ *Frye* cases to bolster the claim for admissibility.<sup>397</sup>

Additionally, Paperno suggests researching if there is a ShotSpotter representative near the jurisdiction in question.<sup>398</sup> Moreover, if the attorney is not able to get the data in trial the attorney may attempt to have officers testify regarding their review (including listening to the audio) of the recording.<sup>399</sup> Paperno noted that usually attorneys are attempting to keep ShotSpotter data out of trial and when an individual is attempting to get the data in, opposing counsel should vehemently challenge its admission and request a *Frye* hearing.<sup>400</sup>

### 3. *The Daubert Standard*

*Daubert v. Merrill Dow Pharmaceuticals, Inc.* overruled *Frye* and replaced the *Frye* standard of “general acceptance” with the Federal Rules of Evidence regarding scientific evidence where “general acceptance” was not a precondition.<sup>401</sup> The Court believed that the *Frye* standard did not comport with the Rules of Evidence and was too restric-

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389. *Id.*

390. *Id.*

391. *See Service and License Agreement 2011, supra note 32.*

392. Paperno, *supra note 387.*

393. *Id.*

394. *Id.*

395. *Id.*

396. *Id.*

397. *Id.*

398. *Id.*

399. *Id.*

400. *Id.*

401. *Daubert v. Merrill Dow Pharm., Inc.*, 509 U.S. 579, 579 (1993).

tive.<sup>402</sup> Federal Rule 702 states that “[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.”<sup>403</sup>

Yet, the *Daubert* standard does not differ dramatically from *Frye*. The Court still wanted to make sure all admitted scientific evidence was reliable.<sup>404</sup> The Court specifically emphasized the important role of scientific methodology, whether the theory or technique can be tested or has been through peer review and publication, and any known or possible rate of error.<sup>405</sup> The Court, however, acknowledged that “general acceptance” is still a relevant consideration and may bear on the analysis.<sup>406</sup> Even with these variations, the results in *Frye* and *Daubert* usually mirror one another, even if the *Daubert* standard focuses on a different question.<sup>407</sup>

Nevertheless, some are concerned that *Daubert* is inflexible,<sup>408</sup> which would be problematic when it comes to emerging technologies. Some believe the *Daubert* Court simply wanted to be rid of “junk science” in the courtroom.<sup>409</sup> The Court, however, seemed to believe that judges were capable of making these scientific screening determinations and felt that this new approach was a more apt reflection of the Federal Rules of Evidence.<sup>410</sup> Post-*Daubert*, Courts typically turn to Federal Rule of Evidence 702 when confronted with a concern about expert testimony and scientific evidence.<sup>411</sup> This rule and *Daubert* places the presiding judge in the role of “gatekeeper,”<sup>412</sup> whereas *Frye* is more deferential to experts in the chosen field.

Given these two standards and the relative concerns about the technology, ShotSpotter will continue to fight through courtroom doors even if the Court holds the technology is constitutional. In terms of reliability, many question how useful ShotSpotter actually is given the minimal in-

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402. *Id.* at 587–88.

403. *Id.* at 588; *see* FED. R. EVID. 702.

404. *Daubert*, 509 U.S. at 589.

405. *Id.* at 593–94.

406. *Id.* at 594.

407. *Id.* at 594–95.

408. Ira H. Leesfield, *The Evolution of Daubert & the Admissibility of Expert Witness Testimony: What's Next?*, TRIAL MAG. (Dec. 2000), <http://www.leesfield.com/the-evolution-of-daubert-the-admissibility-of-expert-witness-tes.html>.

409. COLIN EVANS, CRIMINAL JUSTICE: EVIDENCE 14 (2010). Those people highly skeptical of government intrusion find ShotSpotter to be a “piece of fake science.” ShotSpotter Response, *supra* note 41. Blogger David Robinson gave a thorough run-down of his perceived flaws with ShotSpotter, in particular their 2014 National Gunfire Index reportings. *Id.* He believes the data is made up and still results in illogical and inconsistent conclusions. *Id.* ShotSpotter representatives responded to Robinson’s post with a stinging retaliatory comment stating they did not make up data and emphasized their transparency. *Id.* at cmt.

410. *Daubert*, 509 U.S. at 593.

411. *See* FED. R. EVID. 702.

412. *Daubert*, 509 U.S. at 597; EVANS, *supra* note 409, at 14.

dependent data on the technology.<sup>413</sup> This Note hazards that ShotSpotter will likely fare much better in a *Frye* hearing, where experts in the field are more likely to support the technology and judges might not be as knowledgeable. Moreover, those arguing against ShotSpotter will indeed point to the minimal studies, and this may prove to be more persuasive to a judge in a *Daubert* jurisdiction.

#### 4. *Anti-Admissibility Arguments*

Some arguments against admissibility exist outside the constitutional and procedural arena. One potential claim against ShotSpotter admissibility centers on its “high-tech nature” that “may dazzle juries.”<sup>414</sup> A spokesperson for the National Association of Criminal Defense Lawyers also opined that he would not admit ShotSpotter evidence, and if the prosecution desired admissibility, then an expensive expert must convince the court it is reputable information.<sup>415</sup> This Note recognizes the real reliability concerns raised by the Association, but asserts that courts can address these questions in *Frye* or *Daubert* hearings.<sup>416</sup> Moreover, the National Gunfire Index, while still in its developmental stages, remains an effective tool to alleviate concerns about a fledgling technology.

The ACLU believes admissibility will persuade police forces to use more sensors far surpassing the technology’s utility in an attempt to monitor citizens more closely.<sup>417</sup> The ACLU also notes that this may provide a disincentive for technology manufacturers to produce sensors that solely detect gunshots.<sup>418</sup> While this Note acknowledges these concerns, and these concerns serve as the foundation for this overall piece, this Note opines that with the appropriate restrictions and allowing only gunshot data into trial, these concerns may be mitigated.

Given inappropriate Fourth Amendment frameworks and quandaries relating to admissibility procedures, this Note recommends a novel conception, complete with both a judicial and legislative approach, for ShotSpotter under Fourth Amendment jurisprudence. This approach aims to balance privacy concerns with the need for more effective gunfire apprehension techniques.

## IV. RECOMMENDATION

As technology continues to surpass humankind’s wildest dreams, some argue that it is imperative for courts to actively participate in regulations for emerging technologies, in light of their history and their ability

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413. Knapp, *supra* note 71.

414. Arnoldy, *supra* note 178 (“It’s the gee-whiz effect: It seems so scientific, it must be true, right?”) (internal citation omitted); *see also* Stoddard, *supra* note 277.

415. Arnoldy, *supra* note 178.

416. *See generally supra* notes 378–413 and accompanying text.

417. Stanley, *supra* note 133.

418. *Id.*

to monitor criminal proceedings dealing with technology.<sup>419</sup> Given that over eighty cities across the country use ShotSpotter and the Supreme Court's repeated preference for bright-line rules in the context of the Fourth Amendment,<sup>420</sup> this Note emphasizes the urgency that a standard approach be determined for analyzing whether ShotSpotter data offends the Fourth Amendment and whether the technology is properly admissible in trials.

This Note acknowledges that when the sensors make audio recordings beyond gunshots then there are significant privacy concerns at stake. Therefore, this Note recommends a new bright-line approach that incorporates both a judicial framework as well as acknowledging a tandem legislative approach that harmonizes the public policy concerns with evolving Fourth Amendment jurisprudence.

#### A. *Judicial Recommendation*

This Note recommends a Supreme Court response because while lower courts may begin deciding issues relating to ShotSpotter now, in general lower courts lack the ability to efficiently regulate technology with these surveillance purposes.<sup>421</sup> The Court, however, should not entirely revert back to their earlier precedents and this Note does not advocate for an entire reconstruction of Fourth Amendment holdings.

Some believe, and this Note agrees, that the Fourth Amendment must be liberally construed given the technology innovations in recent decades.<sup>422</sup> But, which framework is most suitable when a sensor detects something that does not simply go “bang”? Is a new framework ideal or even possible? Should there be one model or a combination of different approaches? There is a relatively clear, bright-line answer when it comes to ShotSpotter.

##### 1. *The Right Path, the Bright Path*

This Note campaigns for a return to a bright-line approach, at least for ShotSpotter, where a figurative line is drawn between recordings of solely gunfire and recordings of human conversations. Data relaying gunshots without any accompanying ambient noise should not be considered a search under the Fourth Amendment, whereas any ambient noise should be considered a search and therefore unconstitutional.

This Note asserts that Kerr's policy model is correct in posing the question: should this practice be regulated under the Fourth Amend-

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419. *Kerr: Constitutional Myths*, *supra* note 151, at 805.

420. Gruber, *supra* note 297, at 828–29.

421. Jeremy Brown, *Pan, Tilt, Zoom: Regulating the Use of Video Surveillance of Public Places*, 23 BERKELEY TECH. L.J. 755, 756 (2008).

422. *Kerr: Constitutional Myths*, *supra* note 151, at 804 (“The view that the Fourth Amendment should be interpreted broadly in response to technological change has been embraced by leading theorists of law and technology . . .”).

ment?<sup>423</sup> Absolutely. This Note, however, does not propose a multiple model approach like Kerr, as ShotSpotter analyses only require a singular model—a bright-line model. ShotSpotter can be tested consistently compared to other police practices.

Arguably, when ShotSpotter sensors detect gunfire they are working as enhanced human senses. Period. Police cannot physically be at every street corner. A bright-line standard recognizing a search when ShotSpotter supersedes human senses is the most appropriate test. This type of bright-line framework can better guide police forces<sup>424</sup> and can reconcile ShotSpotter cases across the country. Like *Kyllo*, this Note echoes that law enforcement will benefit from a distinct delineation of which methods require a warrant to avoid violations. This Note recognizes that applying this framework may be difficult to sensors that can both record gunshots and conversations, but this Note firmly believes that with the right maneuvers, technological manipulation, and bright-line judicial approach, police can still use the incomparable technology in a constitutional manner.

Justice Alito's concurrence in *Jones* buttresses this bright-line rule by noting that a reasonable person would likely not have foreseen this level of intrusion, given that ShotSpotter is wholly dissimilar to short-term monitoring.<sup>425</sup> ShotSpotter has the power to gather more information than mere gunshots, and therefore engages in a search under this interpretation.<sup>426</sup> Thus, this bright-line framework essentially comports with a reasonable person's expectations and follows *Katz* without the unnecessary complications that framework entails.

This Note also recommends that courts not revert back to an unwavering physical trespass mentality, however, like the *Jones* Court emanated.<sup>427</sup> Physical trespass as a threshold, while possibly tempting, is severely flawed given the numerous technologies in existence today that are as intrusive, and often more so, as those that physically invade one's property and privacy. *Katz* eliminated physical trespass as a requirement,<sup>428</sup> and while *Katz* may be riddled with judicial potholes, this element should withstand in future cases.

This Note hopes to balance concerns raised about *Katz*'s malleability and lessen concerns about an unsatisfactory<sup>429</sup> bright-line rule. Judicial action, however, is not the only appropriate angle when addressing ShotSpotter and the Fourth Amendment; state and local legislative bodies also possess significant power in this arena.

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423. *Supra* note 356 and accompanying text.

424. Maclin, *supra* note 161, at 70.

425. *See supra* notes 221–28 and accompanying text.

426. Siegel & Hadley, *supra* note 221, at 7.

427. *See supra* notes 335–41 and accompanying text.

428. *Katz v. United States*, 389 U.S. 347, 353 (1967).

429. Gruber, *supra* note 297, at 829.

*B. Legislative Recommendation*

Ideally, the Supreme Court should clarify Fourth Amendment jurisprudence and specifically address concerns related to ShotSpotter and then Congress should codify that decision into a comprehensive statute. In the meantime, however, perhaps a better and direct route to protect privacy rights in public locations should be to voice concerns through legislatures.<sup>430</sup> For instance, courts may not be able to determine how certain technologies fit into the bigger picture.<sup>431</sup> Legislatures are able to move at a quicker pace as technology rapidly evolves, and they are able to construct adaptable “comprehensive rules” which stem from expert opinions.<sup>432</sup> Thus, legislatures are better situated than courts to “generate more nuanced, balanced, and accurate privacy rules when technology is in flux.”<sup>433</sup> Given that the Court has yet to elucidate a concrete privacy framework regarding emerging technologies, it may be up to Congress to complete this task.<sup>434</sup> In fact, courts seem to be calling for this very approach.<sup>435</sup>

This Note recommends that individuals lobby Congress in an effort to forge the implementation of a law, or an amendment to Title III or various state statutes like the Illinois Eavesdropping Statute, that acknowledges ShotSpotter and carves out an exception for the technology if the technology simply does what it claims to do. Since Congress has not been especially active in this area since the passing of Title III, possibly since gunshot triangulation is still a relatively new science, now is the time to address emerging technologies with a new fervor. As more incidents arise where the sensors record ambient noise, then perhaps legislative bodies should consider sanctions for ShotSpotter or local governments in an attempt to encourage the company to fix their technology.

Alternatively, local ordinances and government may provide a more manageable route.<sup>436</sup> For instance, if individuals in certain urban areas with ShotSpotter technology are overwhelmingly concerned with the technology’s presence in their neighborhoods, then they can discuss this with their local government and police enforcement. This can be done through local council meetings and contacting representatives. If a city is already concerned from a budgetary or technological standpoint, then perhaps lobbying efforts by citizens will be more effective.

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430. Benjamin, *supra* note 101, at 16.

431. Kerr: *Constitutional Myths*, *supra* note 151, at 807.

432. United States v. Jones, 132 S. Ct. 945, 964 (2012) (emphasis added); Kerr: *Constitutional Myths*, *supra* note 151, at 807.

433. Kerr: *Constitutional Myths*, *supra* note 151, at 808.

434. Medinger, *supra* note 229, at 442 (“Perhaps such a realignment in the area of emerging technologies will have to wait for legislative action.”); see also Kerr: *Constitutional Myths*, *supra* note 151, at 839–40.

435. Medinger, *supra* note 229, at 442 (“At least one district court has joined in that call, by stating that ‘if the arc of technological improvement (or the implementation of that technology by the government) should be altered in a way that does infringe a person’s legitimate expectation of privacy, the solution is properly for the legislature to address.’”) (internal citation omitted).

436. Elliot, *supra* note 147.

In conjunction with these legislative and lobbying avenues, local law enforcement should consider creating educational programs or, at a minimum, a brochure explaining the technology since many people may not know this technology exists. The mere fact that the sensors can actually do more than detect things that go “bang” begs for “broader public conversation” about ShotSpotter before cities should adopt the technology.<sup>437</sup> While not disclosing the location of ShotSpotter sensors may have contributed to the technology’s success,<sup>438</sup> an informative infrastructure may help alleviate any concerns citizens have regarding their privacy. Moreover, simply identifying areas where the sensors are located with various signs may also help to calm agitated citizens.

### C. Evidence Admissibility Recommendation

This Note finally recommends that at this juncture ShotSpotter data that simply reports gunshots should be admissible in trials given the technology’s proven accuracy, deterrence, and information-gathering abilities.<sup>439</sup> While the technology still must work out various kinks, the improvement overtime coupled with the relatively infrequent reports of malfunctioning sensors should be enough to survive *Frye*, and possibly *Daubert*, hearings.

This Note opines that evidence of recorded conversations should not be admissible; at least until the Supreme Court issues a ruling to the contrary, which this Note finds highly unlikely. Section 801(d) under Title III<sup>440</sup> and the Illinois Eavesdropping Statute<sup>441</sup> also support this stance. This Note asserts that the Court will likely find a Fourth Amendment violation if more incidents occur and the resulting unreasonable search will bring in the exclusionary rule and section 801(d), or local statutory varieties; thus, the recordings will be barred from trial.

## V. CONCLUSION

As more cities adopt ShotSpotter systems to protect their citizens from the gunfire that plagues American streets, Fourth Amendment concerns will continually appear as if ricocheting through the barrel of a gun. This Note demonstrates that current Fourth Amendment jurisprudence does not satisfactorily answer the lingering questions regarding what framework applies to this technology and if this technology will be allowed at trial. This Note advocates for an alternative bright-line frame-

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437. *ShotSpotter is an Appropriate Tool*, *supra* note 27. “It’s important that communities installing the program know precisely what it does because of the evidence that it can record conversations . . . .” Weissman, *supra* note 11.

438. Kurlyandchik, *supra* note 33.

439. See generally *supra* notes 87–120 and accompanying text.

440. See *supra* note 241 and accompanying text.

441. 720 ILL. COMP. STAT. 5/14-5 (2014).

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work and argues that ShotSpotter should be deemed constitutional and admitted in trial if the technology only detects “things that go bang.”

This Note fears that the technology could easily mutate into a more sinister weapon in the hands of the police for eavesdropping on citizens if it is not reigned in through appropriate judicial maneuvers. This Note recognizes the public policy and legislative avenues inherent in this technology that may serve as an alternative in the meantime. Ultimately, ShotSpotter is a verifiable game changer in the hands of local law enforcement and the technology deserves appropriate judicial attention that balances the paramount safety benefits with ongoing privacy concerns.

