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**TRACKING *KNOTTS*: HOW GPS TECHNOLOGY IS INFLUENCING  
TRADITIONAL FOURTH AMENDMENT JURISPRUDENCE**

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[Privacy is] “the most comprehensive of rights and the right most  
valued by civilized men.”

-Justice Louis Brandeis, *Olmstead v. United States*, 1928<sup>1</sup>

“You have zero privacy . . . . Get over it.”

- Scott McNeal, CEO, Sun Microsystems, 1999<sup>2</sup>

The Fourth Amendment has been described as a mess, “. . .  
‘a mass of contradictions and obscurities that has ensnared the  
‘Brethren’ in such a way that every effort to extract themselves  
only finds them more profoundly stuck.”<sup>3</sup> Among the problems  
associated with the Fourth Amendment is the Supreme Court’s  
difficulty in applying the doctrine to the modern world.<sup>4</sup> In its  
quest to reinterpret eighteenth century jurisprudence to be ap-

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<sup>1</sup> 277 U.S. 438, 478 (1928) (Brandeis, J., dissenting).

<sup>2</sup> Stephen Manes, *Private Lives? Not Ours!*, PCWORLD, Apr. 18, 2000, archived at <http://www.webcitation.org/62tmTmwPA>.

<sup>3</sup> David E. Steinberg, *Restoring the Fourth Amendment: The Original Understanding Revisited*, 33 HASTINGS CONST. L.Q. 47, 47 (2005) (quoting Craig M. Bradley, *Two Models of the Fourth Amendment*, 83 MICH. L. REV. 1468, 1468 (1985)).

<sup>4</sup> See *id.* at 70, 73-74 (arguing that the original understanding of the Fourth Amendment is key to applying the doctrine to the modern world).

plicable to twenty-first century innovation, the Court confronts a constant barrage of new technology.<sup>5</sup> While the law develops in the courtroom, law enforcement is taking advantage of the newest and most sophisticated technology in their investigations.<sup>6</sup> It falls to the Court to determine when unsupervised use of this technology violates the rights of the people.<sup>7</sup>

One of the newest tools in the law enforcement repertoire is Global Positioning System (GPS) tracking devices.<sup>8</sup> Police often attach these devices to a suspect's car in lieu of visual surveillance.<sup>9</sup> However, the issue has been raised about whether these devices can, and should, be used without first obtaining a judicial warrant.<sup>10</sup> On one side of the debate, law enforcement officials

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<sup>5</sup> See *United States v. Garcia*, 474 F.3d 994, 997 (7th Cir. 2007) (explaining that "the meaning of a Fourth Amendment search must change to keep pace with the march of science.").

<sup>6</sup> See *Commonwealth v. Goodwin*, 933 N.E.2d 925, 935 (Mass. 2010) (providing an example of the broad application of GPS tracking, and ruling that GPS cannot be used to monitor sex offenders on probation).

<sup>7</sup> See, e.g., *Katz v. United States*, 389 U.S. 347, 350 (1967) (determining whether law enforcement's use of a listening device in a public telephone booth violated the defendant's Fourth Amendment rights).

<sup>8</sup> See CHRISTOPHER SLOBOGIN, *PRIVACY AT RISK: THE NEW GOVERNMENT SURVEILLANCE AND THE FOURTH AMENDMENT 7* (2007) (listing GPS technology as one of many that has only recently found its way into the law enforcement arsenal).

<sup>9</sup> See *id.* at 4 (articulating that law enforcement uses global positioning devices in public safety threats, trivial matters, and even sometimes upon law-abiding citizens).

<sup>10</sup> See, e.g., *United States v. Marquez*, 605 F.3d 604, 609 (8th Cir. 2010) (analyzing whether installing a GPS system without a warrant on the defendant's car violated the defendant's Fourth Amendment rights); *United States v. Maynard*, 615 F.3d 544, 555 (D.C. Cir. 2010) (debating whether tracking a defendant using GPS constitutes an unreasonable search and seizure where police installed a GPS device on defendant's car and tracked his movements for four weeks); *United States v. Pineda-Moreno*, 591 F.3d 1212, 1214 (9th Cir. 2010) (considering the privacy implications of placing GPS tracking devices on a defendant's car over a span of four months, and whether the location of the parked car should impact the devices' reasonableness under the Fourth Amendment); *Garcia*, 474 F.3d at 995-96 (evaluating the reasonableness of a search and seizure conducted after police installed a GPS device on the defendant's rear bumper after following the vehicle, and after the defendant parked the vehicle on a public street, all without first obtaining a warrant).

maintain that requiring a warrant for GPS tracking devices will create practical problems in criminal investigations, and may ultimately call into question traditional surveillance techniques that have never required a warrant in the past.<sup>11</sup> On the other hand, civil rights advocates argue that warrantless surveillance through GPS enhances law enforcement to a point that invades privacy and constitutes a search and seizure under the Fourth Amendment, violating personal liberties and constitutional rights.<sup>12</sup>

This note discusses the implications of the ongoing GPS tracking debate, attempts to demonstrate why allowing law enforcement to conduct warrantless GPS tracking will severely infringe on the public's rights, and outlines potential judicial remedies. Section II begins with a legal history of relevant to warrantless GPS tracking issues. Section II, therefore, provides a general historical background on Fourth Amendment jurisprudence and outlines case law that is fundamental to understanding the warrantless tracking debate. Section II also provides a brief technological background by highlighting the evolution of tracking technology and its application in law enforcement. Section III provides an outline of the most recent cases on the topic, focusing on the federal courts' different approaches to warrantless GPS tracking. Section IV analyzes the strengths and weaknesses of the courts' different approaches, highlights a number of factors courts should consider, and proposes a solution to the GPS debate based on reasonable suspicion. Section V offers a final thought on the status of warrantless GPS tracking in our society.

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<sup>11</sup> See Appellee's Petition for Rehearing En Banc at 15, *United States v. Jones*, 615 F.3d 544 (2010) (No. 08-3034) (arguing that electronic tracking is merely a substitute for visual surveillance).

<sup>12</sup> See Brief of Amicus Curiae Elec. Privacy Info. Ctr. (EPIC) in Support of Appellant at \*13-14, *Commonwealth v. Connolly*, 913 N.E.2d 356 (2010) (No. SJC-10355), 2009 WL 1247272 (maintaining that allowing warrantless tracking to continue is a serious invasion of personal liberty).

## I. History

### A. Relevant Law

#### i. Development of Fourth Amendment Law

Ratified in 1791, the Fourth Amendment was proposed by James Madison in order to ensure the security “of the people . . . in their persons, houses, papers, and . . . [effects], from all unreasonable searches and seizures . . . .”<sup>13</sup> For the first century and a half after ratification the Fourth Amendment was a primarily dormant doctrine.<sup>14</sup> The earliest Fourth Amendment cases did not arise before the Supreme Court until 1855 and 1877, but it wasn’t until 1886 that the Court heard the first Fourth Amendment case of legal significance.<sup>15</sup> In total, the Court heard only five Fourth Amendment cases in the nineteenth century.<sup>16</sup> Originally, the Bill of Rights applied only to the Federal Government,

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<sup>13</sup> See THOMAS N. MCINNIS, *THE EVOLUTION OF THE FOURTH AMENDMENT* 20 (2009) (describing the ratification process of the Bill of Rights). The full text of the Amendment states:

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

U.S. CONST. amend. IV.

<sup>14</sup> See, e.g., POLYVIOS G. POLYVIOS, *SEARCH & SEIZURE: CONSTITUTIONAL AND COMMON LAW* 14-19 (1982) (providing a historical background of the Fourth Amendment).

<sup>15</sup> See *id.* at 14 (summarizing the earliest case law of the Fourth Amendment). See also *Boyd v. United States*, 116 U.S. 616, 622 (1886) (declaring that compulsory production of a person’s private articles in order to make a charge against him is within the spirit and scope of Fourth Amendment); *Ex parte Jackson*, 96 U.S. 727, 733 (1877) (holding that letters and packages could not be opened without a warrant); *Murray v. Hoboken Land Co.*, 59 U.S. 272, 285-86 (1855) (confirming that the Fourth Amendment applies only to criminal proceedings, not civil ones).

<sup>16</sup> See MCINNIS, *supra* note 13, at 21 (discussing the two important facets of American law that delayed the Fourth Amendment’s development and subsequent ability of the Court to then review it).

but not the states.<sup>17</sup> However, the Federal Government rarely conducted criminal investigations that would implicate the Amendment.<sup>18</sup> The Fourth Amendment was eventually incorporated against the states through the Fourteenth Amendment.<sup>19</sup>

*ii. Modern Evolution of the Fourth Amendment*

Under early twentieth century Fourth Amendment jurisprudence, violations of the Fourth Amendment were evaluated via a trespass analysis.<sup>20</sup> Writing for the Court in 1928, Chief Justice Taft noted that surveillance that did not involve physical trespass or physical seizure could not violate the Fourth Amendment.<sup>21</sup> In deciding whether a Fourth Amendment search oc-

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<sup>17</sup> See McINNIS, *supra* note 13, at 21 (citing the fact that the Bill of Rights originally only applied to the federal government as the second reason behind the Supreme Court's delay to enunciate clear rules for the Fourth Amendment). See also *Barron v. Baltimore*, 32 U.S. 243, 250 (1833) (holding that the states were not originally bound by the Bill of Rights).

<sup>18</sup> See BRUCE A. NEWMAN, *AGAINST THAT "POWERFUL ENGINE OF DESPOTISM"* 21 (2007) (providing Fourth Amendment history and demonstrating that the vast majority of cases decided prior to the twentieth century were considered local matters).

<sup>19</sup> See *Wolf v. Colorado*, 338 U.S. 25, (1949) (applying the Fourth Amendment to the states); *Mapp v. Ohio*, 367 U.S. 643, 655 (1961) (overturning part of *Wolf* but reinforcing the notion that the Fourth Amendment applies to the states through the Fourteenth Amendment). In *Mapp*, the local police department conducted a warrantless search of the defendant's home. See *id.* at 644-45. In reviewing the appeal for a motion to suppress, the Supreme Court determined that the exclusionary rule, as applied to the Federal government in *Weeks v. United States*, also applied to the state governments. See *id.* at 655. See also *Weeks v. United States*, 232 U.S. 383, 393 (1914) (discussing a court's right to exclude evidence obtained by a United States marshal through a warrantless search of a defendant's home).

<sup>20</sup> See *Kyllo v. United States*, 533 U.S. 27, 31 (2001) (stating that "well into the 20<sup>th</sup> century, our Fourth Amendment jurisprudence was tied to common-law trespass.").

<sup>21</sup> See *Olmstead v. United States*, 277 U.S. 438, 466 (1928) (holding that warrantless wiretapping of the defendant's telephone did not amount to a Fourth Amendment search or seizure because there was no seizure of tangible items or a physical invasion). *But see id.* at 478-80 (Brandeis, J., dissenting) (recognizing the limitations of analyzing the Fourth Amendment only through trespass). Justice Brandeis argued in his dissent that if Fourth Amendment analy-

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curred, the Supreme Court applied a simple test; they asked for the location of the law enforcement officers at the time of the alleged search.<sup>22</sup> Unless law enforcement committed a physical trespass into one's "person[], house[], papers, or effects, their actions were not considered a search and thus did not violate the Fourth Amendment."<sup>23</sup>

Fourth Amendment analysis took a dramatic turn in 1969 when the Warren Court expressly overruled previous Supreme Court precedent in a case that is still controlling today, *Katz v. United States*.<sup>24</sup> In *Katz*, the defendant was charged with violating a federal statute that prohibited transmitting gambling information over the telephone across state borders.<sup>25</sup> In order to build a case against the defendant, the government recorded Katz's conversations by placing an electronic listening device to the outside of the public telephone booth he used to make his calls.<sup>26</sup> The Court of Appeals, following Supreme Court precedent, ruled that no Fourth Amendment violation occurred because "there was no

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sis did not adapt, the protection against gross encroachments afforded by the Constitution would be negated by modern technology. See POLYVIUO, *supra* note 14, at 23.

<sup>22</sup> See April A. Otterberg, Note, *GPS Tracking Technology: The Case for Revisiting Knotts and Shifting the Supreme Court Theory of the Public Space Under the Fourth Amendment*, 46 B.C. L. REV. 661, 672 (2005) (presenting a framework for the Court's Fourth Amendment violation analysis).

<sup>23</sup> *Id.* at 672. See also *Olmstead*, 277 U.S. at 465-66 (discussing precedent where there was a trespass but no search of a person, house, papers or effects); *Goldman v. United States*, 316 U.S. 129, 134-35 (1942) (declining to distinguish *Goldman* from *Olmstead*).

<sup>24</sup> See 389 U.S. 347, 353 (1967) (overruling *Olmstead* and *Goldman* because the "trespass" doctrine is no longer effective for analyzing Fourth Amendment cases).

<sup>25</sup> See *id.* at 348 (summarizing the charges against the defendant). Katz was charged with violating 18 U.S.C. § 1084. See *id.* at 348 n.1. The statute makes it a crime to transmit betting or wagering information in interstate commerce over wire communications. See 18 U.S.C. § 1084(b) (2011).

<sup>26</sup> See *Katz*, 389 U.S. at 348 (detailing the investigation techniques used by law enforcement in the case).

physical [intrusion] into the area occupied by [the defendant].”<sup>27</sup> The Supreme Court reversed, however, concluding that:

the underpinnings of [previous precedents] have been so eroded by our subsequent decisions that the ‘trespass’ doctrine there enunciated can no longer be regarded as controlling. The Government’s activities in electronically listening to and recording the petitioner’s words violated the privacy upon which he justifiably relied while using the telephone booth and thus constituted a “search and seizure” within the meaning of the Fourth Amendment.<sup>28</sup>

With this decision, the Court rejected a Fourth Amendment analysis based on trespass and adopted one centered on an expectation of privacy.<sup>29</sup>

The Supreme Court’s decision to overrule previous precedent hinged upon their interpretation that “[t]he Fourth Amendment protects people, not places.”<sup>30</sup> The Court theorized that the fundamental purpose of the Fourth Amendment was to protect citizens from invasions of their privacy.<sup>31</sup> In order to support this theory, the *Katz* Court developed a new Fourth Amendment analysis, declaring that a Fourth Amendment search occurs when the government violates a subjective expectation of privacy that so-

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<sup>27</sup> *See id.* at 348-49 (providing the rationale used by the appellate court in their decision to uphold the conviction).

<sup>28</sup> *Id.* at 353 (referring to *Olmstead* and *Goldman*).

<sup>29</sup> *See id.* at 353 (declaring that the Fourth Amendment does not only apply to a physical intrusion upon a given enclosure).

<sup>30</sup> *See id.* at 351 (explaining that the parties erroneously argued over whether the phone booth was a “constitutionally protected’ area” when analysis should have been based on whether Katz had knowingly exposed the private information to the public).

<sup>31</sup> *See Cardwell v. Lewis*, 417 U.S. 583, 589 (1974) (relying on *Katz* to declare that the Fourth Amendment is concerned with the protection of privacy rather than property rights).

ciety recognizes as reasonable.<sup>32</sup> This test is commonly expressed in two prongs: 1) for a search to occur, an individual must have a subjective expectation of privacy; and 2) that expectation must be objectively reasonable.<sup>33</sup>

The first prong of the test relies upon personal conduct.<sup>34</sup> In order to find a subjective expectation of privacy, the court must make a finding that the individual has taken affirmative steps to keep their actions private.<sup>35</sup> The second prong of the *Katz* test is a determination of what “society is prepared to recognize as reasonable.”<sup>36</sup> “According to the Court, ‘[t]he test of legitimacy is not whether the individual chooses to conceal assertedly “private” activity. Rather, the correct inquiry is whether the government’s intrusion infringes upon the personal and societal values protected by the Fourth Amendment.’”<sup>37</sup> The majority of

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<sup>32</sup> See *Kyllo*, 533 U.S. at 33 (describing Justice Harlan’s concurrence in *Katz* that established this standard). See also *Katz*, 389 U.S. at 361 (Harlan, J., concurring) (premising the subjective expectation of privacy in Fourth Amendment analysis). Justice Harlan’s analysis became law when the position was adopted by the Court in *Smith v. Maryland*. See 442 U.S. 735, 739-40 (1979).

<sup>33</sup> See Renée McDonald Hutchins, *Tied Up in Knotts? GPS Technology and the Fourth Amendment*, 55 UCLA L. REV. 409, 427 (2007) (explaining how the Court interpreted the *Katz* decision, relied upon the Harlan concurrence as law, and established the doctrine as valid precedent).

<sup>34</sup> See *id.* at 428 (detailing how the Court makes an assessment of an individual’s subjective expectation of privacy).

<sup>35</sup> See *id.* at 428 (providing examples such as “erecting fences” or “packaging contraband in closed luggage”).

<sup>36</sup> See *Smith*, 442 U.S. at 740-42 (citations omitted) (holding that the installation and use of a pen register to record the numbers being dialed by the defendant was not a search under the Fourth Amendment). The *Smith* Court reasoned that the defendant could have no reasonable expectation of privacy since the numbers would be transmitted to and recorded by the phone company. See *id.* at 742. Since the phone company would also have the information, it could not be considered objectively and reasonably private. See *id.* at 744-45.

<sup>37</sup> Hutchins, *supra* note 33, at 429 (quoting *Oliver v. United States*, 466 U.S. 170, 182-83 (1984) (footnote omitted) and walking through the Court’s analysis).

the Court's Fourth Amendment analysis focuses on whether a search occurred under the objective prong of the *Katz* test.<sup>38</sup>

If a court finds that a search has taken place, searches that are conducted without a warrant are considered *per se* unreasonable, and thus are considered a violation of the Fourth Amendment.<sup>39</sup> In order to obtain a search warrant, law enforcement first needs to demonstrate probable cause that a person has engaged in criminal activity.<sup>40</sup> However, certain exceptions to the warrant requirement exist that allow police to conduct searches without a warrant, and occasionally, without probable cause.<sup>41</sup> Searches courts allow to take place without probable cause generally invoke a lesser threshold inquiry, known as reasonable suspicion.<sup>42</sup> The reasonable suspicion standard is a by-product of *Terry v. Ohio*, where the Supreme Court determined that police officers may conduct investigatory stops of people

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<sup>38</sup> See Hutchins, *supra* note 33, at 429 (stating that a greater portion of Fourth Amendment cases have focused on the second, rather than first, prong of the analysis).

<sup>39</sup> See *Katz*, 389 U.S. at 357 (confirming what types of searches will be deemed *per se* invalid by stipulating that a judge or magistrate must approve of a search before law enforcement conduct the search).

<sup>40</sup> See Kaitlyn A. Kerrane, Note, *Keeping Up with Officer Jones: a Comprehensive Look at the Fourth Amendment and GPS Surveillance*, 79 *FORDHAM L. REV.* 1695, 1705 (2011) (indicating that while the Fourth Amendment does not always require a search warrant, the Supreme Court has professed a strong preference for them).

<sup>41</sup> See *Katz*, 389 U.S. at 357-58 (explaining that none of the exceptions applied to the electronic surveillance situation at hand). Valid exceptions to the warrant requirement to search include searches based on exigent circumstances, consent searches, vehicle searches, searches incident to a valid arrest, and "pat-frisk" searches. See, e.g., *Kirk v. Louisiana*, 536 U.S. 635, 638 (2002); *Schneekloth v. Bustamonte*, 412 U.S. 218, 227-28 (1973); *United States v. Robinson*, 414 U.S. 218, 235 (1973); *Carroll v. United States*, 267 U.S. 132, 161-62 (1925).

<sup>42</sup> See *Terry v. Ohio*, 392 U.S. 1, 27 (1968) (permitting a police officer to conduct a search for weapons where a reasonably prudent officer under the same circumstances would believe his safety, or the safety of others, was in danger).

they reasonably suspect of committing criminal activity.<sup>43</sup> Although a lesser standard than probable cause, reasonable suspicion is more than an "inchoate and unparticularized suspicion or 'hunch'," and law enforcement must demonstrate that they had "specific and articulable facts, . . . taken together with rational inferences from those facts" that criminal activity was afoot.<sup>44</sup>

### *iii. The Fourth Amendment and Emerging Technology*

Technology is a great resource for law enforcement because it has the power to significantly enhance the efficiency of criminal investigations.<sup>45</sup> Since the adoption of the *Katz* test, the Supreme Court has analyzed a number of new technological devices to determine whether their use in law enforcement constitutes a search under the Fourth Amendment.<sup>46</sup> In two cases, the Court considered whether visual surveillance via an airplane constituted a Fourth Amendment search.<sup>47</sup> In both *Ciraolo* and *Dow Chemical*, the Court determined that no search took place because no reasonable expectation of privacy was violated.<sup>48</sup> In

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<sup>43</sup> See *id.* at 21, 27 (validating an investigatory stop when police observed defendants acting in a manner consistent with perpetrators in the process of conducting robbery).

<sup>44</sup> *Id.* (articulating that reasonable suspicion may differ in each case, and is determined by the particular circumstances).

<sup>45</sup> See *Kyllo*, 533 U.S. at 40 (finding that the use of thermal imaging device by law enforcement to detect heat inside of the defendant's home is "presumptively unreasonable" under the Fourth Amendment); *California v. Ciraolo*, 476 U.S. 207, 209, 215 (1986) (holding that law enforcement's actions of securing a private airplane and taking photographs of defendant's backyard at an altitude of 1,000 feet did not violate the Fourth Amendment); *Dow Chem. Co. v. United States*, 476 U.S. 227, 238-39 (1986) (stating that the taking of aerial photographs from navigable airspace above an industrial plant does not constitute a violation of the Fourth Amendment).

<sup>46</sup> See, e.g., *Kyllo*, 533 U.S. at 29-30 (analyzing the use of a thermal imaging device to obtain evidence from inside a residence).

<sup>47</sup> See *Ciraolo*, 476 U.S. at 211-14 (applying the two-prong *Katz* test); *Dow Chem.*, 476 U.S. at 235-39 (analyzing whether the search in question was reasonable).

<sup>48</sup> See *Ciraolo*, 476 U.S. at 213-14 (relating police observations from airspace to those from the street); *Dow Chem.*, 476 U.S. at 238-39 (determining that air-

reaching their decision, the Court pointed to the fact that by observing the activities below the airplane, law enforcement was merely enhancing their senses by gaining a better vantage point.<sup>49</sup> The Court went on to note that it was not unreasonable for the defendants to expect that the police could conduct surveillance from the air because airplanes are a common mode of travel available to the public, from which they can see all below them.<sup>50</sup>

In a more recent case, *Kyllo v. United States*, the Court applied the *Katz* test to an investigation that utilized a thermal imaging device to detect marijuana growing in a private home.<sup>51</sup> Declaring that the use of the device was an unconstitutional search under the Fourth Amendment, the Court noted several factors that led them to find that the homeowner's reasonable expectation of privacy was violated.<sup>52</sup> Unlike the airplane in *Dow Chemical* and *Ciraolo*, the thermal imaging device used in *Kyllo* was not a piece of technology in use by the general public.<sup>53</sup> Furthermore, the device in *Kyllo* threatened to reveal more intimate information than in the other cases because it had the potential to reveal information from inside the home, to which police would not otherwise have access.<sup>54</sup> Based on these factors, the

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plane technology, though enhancing human vision, does not rise to the level of an additional sense).

<sup>49</sup> See Cheryl Kettler Corrada, Comment, *Dow Chemical and Ciraolo: For Government Investigators the Sky's No Limit*, 36 CATH. U.L. REV. 667, 69 (1987) (evaluating the Court's holdings in both *Ciraolo* and *Dow Chemical*).

<sup>50</sup> See *Ciraolo*, 476 U.S. at 213-14 (explaining that any member of the public flying in this airspace could have seen what the police officers saw); *Dow Chem.*, 476 U.S. at 239 (reporting that observations made by aircraft lawfully in the public airspace does not violate the Fourth Amendment).

<sup>51</sup> See *Kyllo*, 533 U.S. at 34-41 (analyzing whether the use of a thermal image device constituted an intrusion of the home).

<sup>52</sup> See *id.* at 35-40 (outlining why the use of thermal imaging went beyond the techniques law enforcement may utilize without a warrant).

<sup>53</sup> See *id.* at 32-34 (comparing the different types of technology used in each case to draw conclusions about the reasonableness of a search conducted by a given method).

<sup>54</sup> See *id.* at 35 (articulating that one's home is an undoubtedly constitutionally-protected area, and any information inside it is *per se* private). The Court ra-

Court determined that it would be objectively unreasonable for the defendant to believe that the technology would be used to violate his privacy.<sup>55</sup>

#### *iv. Tracking Technology as a Search*

One of the most powerful pieces of technology law that enforcement utilizes in their investigations are electronic tracking devices.<sup>56</sup> Electronic trackers are devices affixed to a suspect's automobile that remotely relay information about the automobile's location back to law enforcement.<sup>57</sup> The development of these devices allows police to track suspects without maintaining constant visual contact, lessening the chance that suspects will realize they are being followed.<sup>58</sup> Enabling investigators to be further removed from suspects improves their ability to make

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tionalizes its holding by explaining that the information obtained through the thermal imaging device provided information that could otherwise only have been obtained by a "physical intrusion into a constitutionally protected area." *See id.*

<sup>55</sup> *See id.* at 35-36 (cautioning that while the evidence obtained through use of the thermal imaging device was relatively minimal, allowing the use of such a device would require the Court to uphold the use of other, more technologically-advanced devices, in the foreseeable future).

<sup>56</sup> *See* Otterberg, *supra* note 22, at 666-70 (describing in detail the many types of tracking devices used by law enforcement).

<sup>57</sup> *See* S. REP. NO. 99-541, at 8 (1986), *reprinted in* 1986 U.S.C.C.A.N. 3555, 3564 (defining electronic tracking devices).

These are one-way radio communication devices that emit a signal on a specific radio frequency. This signal can be received by special tracking equipment, and allows the user to trace the geographical location of the transponder. Such 'homing' devices are used by law enforcement personnel to keep track of the physical whereabouts of the sending unit, which might be placed in an automobile, on a person, or in some other item.

*Id.*

<sup>58</sup> *See* United States v. Knotts, 460 U.S. 276, 278, 285 (1983) (noting that at one point during the surveillance the suspects took evasive maneuvers, the police lost visual contact with the suspect, but police were able to relocate the car by relying on the electronic device).

observations undetected.<sup>59</sup> Despite the significant advantage electronic tracking devices give police in monitoring suspects, under current Supreme Court precedent, tracking devices may be affixed to automobiles without first obtaining a warrant.<sup>60</sup>

The first warrantless electronic tracking case considered by the Supreme Court was *United States v. Knotts*.<sup>61</sup> In *Knotts*, police suspected the defendant of manufacturing drugs after he purchased a large quantity of materials used in the creation of methamphetamines.<sup>62</sup> Although the police could have conducted visual surveillance of Knotts' car, they chose to place an electronic tracking device in a canister of chemicals they suspected he would steal.<sup>63</sup> Knotts challenged the subsequent conviction on the grounds that it was based on an illegal search because no warrant was obtained in connection with the tracking device.<sup>64</sup> The Supreme Court rejected Knotts' argument, concluding that he failed to demonstrate that a Fourth Amendment search or seizure occurred according to the Katz test because Knotts knowingly exposed his whereabouts on a public road, and it would be unreasonable to expect this information to remain private.<sup>65</sup> The use of an electronic device to help the police gain this information did not change this basic premise, because augmenting one's

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<sup>59</sup> See Steven Penney, *Reasonable Expectations of Privacy and Novel Search Technologies: An Economic Approach*, 97 J. CRIM. L. & CRIMINOLOGY 477, 519 (2007) (explaining that electronic tracking requires less manpower, is more reliable, and carries a lower risk of detection).

<sup>60</sup> See *Knotts*, 460 U.S. at 285 (holding that monitoring tracking device signals did not constitute a search or a seizure under the Fourth Amendment).

<sup>61</sup> 460 U.S. 276, 277 (1983) (presenting issue as to whether the use of a beeper for monitoring the progress of a car carrying chloroform violated the defendant's Fourth Amendment rights).

<sup>62</sup> See *id.* at 277-78 (summarizing the charges against the defendant). The defendants were suspected of manufacturing controlled substances after a chemical company alerted police that a former employee was stealing chemicals known to be used in the creation of illegal drugs. See *id.* at 278. The defendants were charged with violating 21 U.S.C. § 846 (1986). See *id.* at 277.

<sup>63</sup> See *id.* at 278 (rationalizing the conduct of the police as it pertains to the facts of the case).

<sup>64</sup> See *id.* at 279 (summarizing the procedural history of the case).

<sup>65</sup> See *id.* at 285 (reversing the ruling of the appellate court).

senses with technological advancements is not a constitutional violation.<sup>66</sup>

Although *Knotts* declared warrantless electronic tracking constitutional, the Court failed to resolve whether the initial installation of the device was a Fourth Amendment violation.<sup>67</sup> A year later the Court confronted the issue in *United States v. Karo*.<sup>68</sup> In *Karo*, the DEA received a tip that defendant Karo was purchasing canisters of ether as part of a drug smuggling operation.<sup>69</sup> With consent from the seller, agents placed an electronic tracking device in one of the canisters and included it in the sale to the defendant.<sup>70</sup> By following signals received from the device, agents were able to track the canister to various locations, including private homes.<sup>71</sup> Based on the information received from the tracking device, agents obtained a warrant to search the premises where the ether was being held, and arrested Karo and his co-conspirators.<sup>72</sup>

The United States appealed the suppression of evidence derived from the use of the beeper on the grounds that there was no violation of Karo's and the other defendant's expectation of privacy.<sup>73</sup> The Court held that Karo could have no reasonable

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<sup>66</sup> *See id.* at 282 (using technology to accomplish the same end as visual surveillance is not a Fourth Amendment violation).

<sup>67</sup> *See Knotts*, 460 U.S. at 285-86 (Brennan, J., concurring) (noting that the case would have been more difficult had the original installation of the beeper been considered).

<sup>68</sup> 485 U.S. 705 (1984).

<sup>69</sup> *See id.* at 708 (summarizing the facts of the case, and the events instigated by the defendant to garner police attention).

<sup>70</sup> *See id.* at 708 (illustrating the way in which the police installed the tracking device in the can of ether).

<sup>71</sup> *See id.* at 708-10 (describing how agents monitored the defendant both on public roads and on private land, including a time when the canisters entered a private residence).

<sup>72</sup> *See id.* at 710 (contextualizing the circumstances that led to the defendant's arrest).

<sup>73</sup> *See id.* at 713 (stating that in this circumstance there was no Fourth Amendment violation).

expectation of privacy in the container at the time of installation because it was still owned by the government.<sup>74</sup> The Court went on to consider the transfer of the hidden tracking device to Karo, but again found no constitutional violation.<sup>75</sup> The Court reasoned that no Fourth Amendment violation took place because no information was revealed to the agents during the transfer of the container, and thus there was no actual invasion of Karo's privacy.<sup>76</sup> Likewise, the Court found that the transfer could not be considered a seizure under the Fourth Amendment because the device did not impact Karo's possessory rights in the container.<sup>77</sup>

The preeminent electronic tracking device cases, *Knotts* and *Karo*, left two issues unresolved that the Court still has not addressed. In *Karo*, the Court held the installation of a tracking device in a container which was then transferred to the defendant was not a search or seizure under the Fourth Amendment, but did not consider the legality of a device which was attached

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<sup>74</sup> See *Karo*, 485 U.S. at 711 (noting that even if the government had not owned the containers there would still be no violation because they received consent from the present owner, the seller, at the time of installation).

<sup>75</sup> See *id.* at 712 (stressing that there was, at most, a "technical trespass" on the space occupied by the beeper).

<sup>76</sup> See *id.* at 712 (reasoning that no information was conveyed to the agents about Karo because the device was unmonitored at the time of the transfer). Although the transfer created a potential for an invasion of privacy, a potential invasion is insufficient to constitute a search. See *id.*

<sup>77</sup> See *id.* at 712-13 (explaining that a physical trespass is only marginally relevant to the Fourth Amendment question); see also *United States v. Jacobsen*, 466 U.S. 109, 113 (1984) (defining a Fourth Amendment seizure as occurring when "there is some meaningful interference with an individual's possessory interests in that property."). Despite ruling that the installation of the tracking device was constitutional, the *Karo* Court went on to find that the monitoring of this particular device did violate Karo's Fourth Amendment rights. See *Karo*, 468 U.S. at 713. Unlike in *Knotts*, the device here also tracked the movements of the containers while it was inside a private residence. See *id.* at 715. The Court distinguished *Karo* from *Knotts* on the fact that the information provided to the government was not obtainable through visual surveillance and could not be gathered without a warrant. See *id.*

directly to the automobile.<sup>78</sup> Subsequent courts considering the issue have analogized with the reasoning in *Karo* and held that it is neither a search nor seizure, but the Supreme Court has not yet decided the issue.<sup>79</sup> The *Knotts* Court also left an issue open, creating an exception to their own ruling when, in response to the defendant's claim that "the result of the holding sought by the government would be that 'twenty-four hour surveillance of any citizen of this country will be possible, without judicial knowledge or supervision,'" the Court determined that the issue could be revisited if necessary.<sup>80</sup> In creating the *Knotts* exception, the Court held that "if such dragnet type law enforcement practices as respondent envisions should eventually occur, there will be time enough then to determine whether different constitutional principles may be applicable."<sup>81</sup> Both of these unresolved issues will continue to be the basis of attacks on the legality of warrantless electronic tracking so long as they are left unanswered.<sup>82</sup>

In the wake of *Knotts* and *Karo*, Congress enacted legislation in 1986 specifically confronting the installation and use of tracking devices in criminal investigations.<sup>83</sup> However, this legis-

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<sup>78</sup> See *Karo*, 468 U.S. at 718 n.5 (justifying the Court's inability to rule on the legality of attaching a beeper to a car).

<sup>79</sup> See *U.S. v. McIver*, 186 F.3d 1119, 1127 (9th Cir. 1999) (holding that a tracking device attached to the defendant's automobile did not deprive him of dominion or control, nor did it damage the automobile).

<sup>80</sup> See *Knotts*, 460 U.S. at 283-84 (justifying the Court's reservation of the issue for a later time).

<sup>81</sup> *Id.* at 284.

<sup>82</sup> See Sarah Rahter, Note, *Privacy Implications of GPS Tracking Technology*, 4 I/S: J. L. & POL'Y FOR INFO. SOC'Y 755, 759 (2008-2009) (indicating that the lack of legislative protection from GPS tracking has led to individuals bringing Fourth Amendment attacks on GPS tracking use).

<sup>83</sup> See 18 U.S.C. § 3117 (2011) (establishing legislation).

(a) In general.—If a court is empowered to issue a warrant or other order for the installation of a mobile tracking device, such order may authorize the use of that device within the jurisdiction of the court, and outside that jurisdiction if the device is installed in that jurisdiction.

(b) Definition.—As used in this section, the term "tracking device" means an electronic or mechanical

lation does not require law enforcement to procure warrants before installing such devices; rather, it addresses jurisdictional issues in providing warrants should one be requested.<sup>84</sup> In addition, the legislature amended the Federal Rules of Criminal Procedure in 2006, allowing “federal agents to obtain, process, and return warrants for installation and use of tracking devices.”<sup>85</sup> Again, the legislation failed to specify the standard for the installation of a tracking device.<sup>86</sup> Without clear guidance, the question of when warrants are and are not required for developing tracking technology remains unclear.

### *B. Relevant Technology*

Today, there is still no recognized constitutional need to obtain a warrant before installing a tracking device on an automobile.<sup>87</sup> While constitutional law has stood firm, technology has marched forward, and the electronic tracking devices used in *Knotts* and *Karo* have given way to more sophisticated tools.<sup>88</sup> In *Knotts* and *Karo*, law enforcement used electronic tracking devices, known as beepers, to track the defendants.<sup>89</sup> According to the *Knotts* Court, “[a] beeper is a radio transmitter, usually battery operated, which emits periodic signals that can be picked up by a

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device which permits the tracking of the movement  
of a person or object.

*Id.*

<sup>84</sup> See Rahter, *supra* note 82, at 758 n.15 (discussing that the purpose of 18 U.S.C. § 3117 is to provide courts with “extra-territorial jurisdiction” over tracking in their jurisdictions).

<sup>85</sup> See Rahter, *supra* note 84, at 758-59 (summarizing the amended procedures for the use of tracking devices by federal agents).

<sup>86</sup> See Rahter, *supra* note 82, at 758-59 (critiquing the legislation as ineffective for meeting personal privacy demands).

<sup>87</sup> See Rahter, *supra* note 82 at 759-60 (observing that the Supreme Court has not yet decided upon the warrant requirement for use of GPS tracking devices).

<sup>88</sup> See Rahter, *supra* note 82 at 756 (describing how GPS devices continue to infiltrate peoples’ everyday lives as technology advances).

<sup>89</sup> See *Knotts*, 460 U.S. at 278 (attaching a beeper in a five gallon container of chloroform); *Karo*, 460 U.S. at 708 (placing a beeper in a can of ether).

radio receiver.”<sup>90</sup> Beepers “can reveal locations but cannot record or transmit conversations.”<sup>91</sup> Beepers were popular in the 1970s and 1980s, and allowed police to track a suspect without maintaining visual contact.<sup>92</sup> Beepers work by indicating the direction in which a suspect is traveling by emitting a series of fast “beep” sounds when the suspect is close, and slowing down as the suspect moves further away.<sup>93</sup> However, beepers have their limitations; most notably, the lifespan of the beeper is limited by that of its battery.<sup>94</sup> Although investigators may choose to power the beeper by tying it to a car’s electrical system, this increases the chance that the beeper will be discovered.<sup>95</sup> In addition, while beepers do not require police to maintain visual contact, they do require the police to remain an active part in a tracking process known as “loose tracking.”<sup>96</sup> Loose tracking allows police to track the beeper’s location from afar through the use of another device that receives the beeper’s signal, which indicates the location of the beeper.<sup>97</sup>

Today, the electronic tracking device of choice for law enforcement is GPS.<sup>98</sup> GPS is a military-developed technology that allows the user to identify the location, speed, and direction of a

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<sup>90</sup> *Knotts*, 460 U.S. at 277.

<sup>91</sup> WEST, SEARCH AND SEIZURE CHECKLIST 837 (2011) (defining what a beeper is for Fourth Amendment purposes).

<sup>92</sup> Ramya Shah, *Recent Development: From Beepers to GPS: Can the Fourth Amendment Keep Up with Electronic Tracking Technology?*, 2009 U. ILL. J.L. TECH. & POL’Y 281, 283 (2009) (observing that beepers were once popular, but quickly become outdated as new technologies emerged).

<sup>93</sup> MICHAEL D. LYMAN, PRACTICAL DRUG ENFORCEMENT 119 (3rd ed. 2007) (describing the matter in which beepers transmit information to police officers).

<sup>94</sup> *See id.* (discussing the problems associated with batteries).

<sup>95</sup> *See id.* (pointing out the practical weakness of beepers that run off a car’s electrical system).

<sup>96</sup> *See id.* (explaining how beepers do not require police to maintain constant visual contact with a suspect, but can maintain a “loose trail” of the suspect).

<sup>97</sup> *See* POLYVIU, *supra* note 14, at 72 (describing the transmittal process of the beeper that allows police to use loose tracking).

<sup>98</sup> *Global Positions System*, WIRELESSCENTER, Oct. 27, 2011, archived at <http://www.webcitation.org/62l4Ysr2A> (describing GPS technology as the device of choice for law enforcement agencies).

target.<sup>99</sup> Unlike beepers, which only tell agents their relative distance from the automobile, GPS can pinpoint the position of a target within a few meters of accuracy.<sup>100</sup> Although initially only a military technology, GPS is now commercially available, and is being increasingly incorporated into a number of consumer products, including cell phones and personal automobile navigation units.<sup>101</sup>

Similar to beepers, GPS units can be installed stealthily by criminal investigators, and can be powered either by a battery or through an automobile's electrical system.<sup>102</sup> Unlike beepers, GPS units do not just relay their position back to investigators; they can also store data over extended periods of time.<sup>103</sup> Officers can choose to have the information received by the GPS remotely transferred back to them, or they can physically remove

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<sup>99</sup> See Hutchins, *supra* 33, at 414 (summarizing the history of GPS technology and its development).

<sup>100</sup> See Hutchins, *supra* 33, at 417 (describing the capabilities of GPS). GPS works by first transmitting data from a receiver to a group of satellites in orbit around the earth. See *id.* at 415. The satellites orbit around a fixed path, and using the data received from the receiver, are able to determine the distance the transponder is from the satellite. See *id.* By utilizing the distance provided by three or more of the satellites, an exact position is triangulated to a position on the surface of the earth. See *id.* See also *What is GPS*, GARMIN, Mar. 31, 2011, archived at <http://www.webcitation.org/5xaWJH5im> (providing a description of commercially available GPS navigational units and how they function).

<sup>101</sup> See Hutchins, *supra* 33 at 414-15 (detailing the military history of GPS devices and its present applications). The United States Air Force initially forced GPS satellites to relay inaccurate information when the technology first became available for civilian use, in order to maintain a tactical advantage should the system be taken advantage of. See *id.* at 414. However, in 2000, these minor fluctuations were removed, and theoretically the information received through civilian GPS is as accurate as that received by the U.S. military. See *id.* at 415.

<sup>102</sup> See *Commonwealth v. Connolly*, 913 N.E.2d 356, 362 (Mass. 2009) (explaining how GPS devices are powered). In *Connolly*, investigators attached the GPS unit to the defendants' automotive electrical system rather than having the GPS run off of battery power. See *id.*

<sup>103</sup> See *Pineda-Moreno*, 591 F.3d at 1213 (indicating that the GPS device recorded and logged the movements of the defendant's vehicle). The defendant was under surveillance over a four-month period, during which the tracking device was replaced seven times. See *id.*

the unit from the target and download the stored information.<sup>104</sup> GPS gives law enforcement a significant advantage in criminal investigations compared to beeper technology because the actual tracking of the suspect is done almost entirely by the GPS itself, requiring officers only to install and remove the unit.<sup>105</sup>

## II. Facts

The issue of warrantless GPS tracking has been raised numerous times in both state and federal courts, making its way to four of the federal circuit courts in the past five years.<sup>106</sup> De-

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<sup>104</sup> See *id.* (distinguishing between the two types of GPS units used to track the defendant).

<sup>105</sup> See Hutchins, *supra* note 33, at 418-19 (identifying the ways in which GPS is beneficial to law enforcement agencies).

<sup>106</sup> See *Marquez*, 605 F.3d at 609 (contemplating whether evidence gathered from a GPS tracking device should be suppressed); *Maynard*, 615 F.3d at 555 (introducing the question for analysis—whether the use of a GPS device constituted a search, and whether it was reasonable); *Pineda-Moreno*, 591 F.3d at 1214 (presenting the issue of whether placing a tracking device on defendant's vehicle and monitoring it constituted an unreasonable search); *Garcia*, 474 F.3d at 995 (describing the only issue as “whether evidence obtained as a result of a tracking device attached to [the defendant's] car should have been suppressed as the fruit of an unconstitutional search.”); *People v. Zichwic*, 114 Cal. Rptr. 2d 733, 739-40 (Cal. Ct. App. 2001) (considering whether the use of GPS technology is a search under the Fourth Amendment); *State v. Holden*, Nos.10-03-0545 - 0548, 2010 WL 5140744, at \*7-8 (Del. Super. Ct. Dec. 14, 2010) (discussing that Delawareans have a reasonable expectation of privacy against continuous GPS monitoring); *Connolly*, 913 N.E.2d at 366 (addressing whether a GPS search after a warrant expired violated the defendant's privacy); *Osburn v. State*, 44 P.3d 523, 525 (Nev. 2002) (declaring that the use of GPS tracking devices on a vehicle without a warrant is an issue of first impression for Nevada courts); *People v. Weaver*, 909 N.E.2d 1195, 1201 (N.Y. 2009) (determining that the Fourth Amendment was violated when police used a GPS device known as a “Q-ball”); *State v. Campbell*, 759 P.2d 1040, 1041 (Or. 1988) (construing the issue as whether police use of a radio transmitter to locate a vehicle constitutes a search and seizure); *Foltz v. Commonwealth*, 706 S.E.2d 914, 919-20 (Va. Ct. App. 2011) (determining whether police testimony should be excluded or if it was sufficiently attenuated from the use of the GPS tracking device); *State v. Jackson*, 76 P.3d 217, 220 (Wash. 2003) (describing the issue as whether a warrant is required under the Washington Constitution).

spite the number of times it has been litigated, courts have approached the issue in a number of ways, leading to different interpretations among the states, and a split between the federal circuits.<sup>107</sup> The Seventh, Eighth, and Ninth Circuits have all held that a warrant is not required to track a suspect with a GPS device.<sup>108</sup> On the other hand, in the most recent federal circuit case, the D.C. Circuit declared that warrantless GPS tracking conducted by the police was a violation of the Fourth Amendment.<sup>109</sup> Criti-

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<sup>107</sup> Compare *Maynard*, 615 F.3d at 566-67 (holding that the surveillance of the defendant's car constituted a search, and therefore violated the warrant requirement of the Fourth Amendment), and *Holden*, 2010 WL 5140744, at \*8 (stating that adequate judicial supervision is necessary to preserve privacy when using GPS technology), and *Connolly*, 913 N.E.2d at 369 (concluding that a warrant was required because installation required police to enter the vehicle and operate the vehicle's electrical system), and *Weaver*, 909 N.E.2d at 1203 (stating that the installation and use of a GPS device to monitor an individual's whereabouts requires a warrant supported by probable cause), and *Campbell*, 759 P.2d at 1049 (requiring a warrant for the use of a radio transmitter to locate the defendant's automobile), and *Jackson*, 76 P.3d at 224 (holding that installing a GPS device on a private vehicle is a search and seizure requiring a warrant), with *Marquez*, 605 F.3d at 609 (reasoning that a person traveling on public streets in a vehicle has no reasonable expectation of privacy in their movements from one location to another), and *Pineda-Moreno*, 591 F.3d at 1216-17 (describing the use of GPS devices as merely a more-effective police surveillance method, and therefore not a constitutional issue), and *Garcia*, 474 F.3d at 998 (delaying the constitutional question regarding GPS devices to a later time when police engage in mass surveillance), and *Zichwic*, 114 Cal. Rptr. 2d at 742 (agreeing with the Ninth Circuit that there can be no objectively reasonable expectation of privacy in what is "regularly exposed to public view."), and *Osburn*, 44 P.3d at 526 (articulating that the defendant did not have a subjective or objective expectation of privacy in his vehicle's bumper), and *Foltz*, 706 S.E.2d at 918 (reaching its conclusion without addressing whether the use of a GPS device attached to an employer's van violated the defendant's Fourth Amendment right).

<sup>108</sup> See *Marquez*, 605 F.3d at 609 (refusing to find a reasonable expectation of privacy where a person travels on public streets in a vehicle); *Pineda-Moreno*, 591 F.3d at 1216 n.2 (agreeing with the Seventh Circuit's determination that a constitutional question regarding GPS use will present itself once police engage in mass surveillance of vehicular movements); *Garcia*, 474 F.3d at 998 (holding that a constitutional issue will present itself regarding GPS use when police engage in mass surveillance).

<sup>109</sup> See *Maynard*, 615 F.3d at 563 (finding that the extended use of the GPS device violated the defendant's reasonable expectation of privacy).

cal to the defendants' argument in each of these cases was the meaning of the "*Knotts* exception."<sup>110</sup> In the first three cases, a "wholesale" theory was argued and rejected by the courts.<sup>111</sup> Not until the "prolonged use" theory was advanced in the D.C. Circuit was GPS tracking held to be unconstitutional.<sup>112</sup>

#### A. "Wholesale Surveillance"

In the Seventh, Eighth and Ninth Circuits, the courts all expressed concern that GPS could one day be used to conduct "wholesale" or "mass" surveillance by attaching GPS devices to automobiles at random and analyzing the collected data for suspicious activity.<sup>113</sup> However, in each case, the court determined that use of GPS had not yet reached such a level to trigger concern.<sup>114</sup> Judge Posner, writing for the Seventh Circuit, held that

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<sup>110</sup> See *id.* at 556-57 (clarifying what the *Knotts* Court meant when they reserved the question of "dragnet" surveillance). The *Maynard* court went on to explain that the Seventh, Eighth and Ninth Circuits incorrectly interpreted the question reserved in *Knotts* when deciding their respective cases. See *id.* at 557-58.

<sup>111</sup> See *id.* at 558 (summarizing the position taken by the other circuit courts); *Marquez*, 605 F.3d at 610 (dismissing the wholesale theory because "there was nothing random or arbitrary about the installation and use of the device."); *Pineda-Moreno*, 591 F.3d at 1216 n.2 (distinguishing three state supreme courts' conclusions that tracking devices are impermissible under their respective state constitutions); *Garcia*, 474 F.3d at 997-98 (rejecting the wholesale theory because the facts of the case did not support its application).

<sup>112</sup> See *Maynard*, 615 F.3d at 558 (explaining that "prolonged surveillance" was the correct application of the *Knotts* exception).

<sup>113</sup> See *id.* (insinuating that the other circuit courts ruled on the incorrect issue in their respective opinions). See also *Marquez*, 605 F.3d at 610 (imagining that wholesale surveillance potentially exists where police attach tracking devices to thousands of cars at random, but concluding that this has not yet occurred); *Pineda-Moreno*, 591 F.3d at 1216 n.2 (agreeing with the *Garcia* court that the police actions did not amount to a search, but would be willing to reconsider the issue should the government institute mass surveillance programs); *Garcia*, 474 F.3d at 998 (recognizing that technology poses a threat to privacy because the police's ability to monitor and install tracking devices is always increasing).

<sup>114</sup> See *Marquez*, 605 F.3d at 610 (dismissing the claim because there was nothing random or arbitrary about the car chosen for surveillance, and the police reasonably suspected it was involved in wrongdoing); *Pineda-Moreno*, 591

GPS tracking, though more sophisticated, was analogous to beeper tracking, and did not rise to the level of a Fourth Amendment search under the precedent of *Knotts* and *Karo*.<sup>115</sup> Although *Knotts* and *Karo* left open the question of whether attaching a tracking device to a car constitutes a search, Posner considered the act of installation inconsequential to a Fourth Amendment analysis, and found no constitutional violation.<sup>116</sup> Despite his ruling, Judge Posner recognized that GPS tracking could one day cross into the realm of the unconstitutional.<sup>117</sup>

In the two circuits court cases decided immediately following *Garcia*, both defendants tried to argue that the installation of the beeper was an unconstitutional search of his automobile.<sup>118</sup> In both *Pineda-Moreno* and *Marquez*, the courts chose to adopt the Seventh Circuit's reasoning.<sup>119</sup> Again, the courts al-

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F.3d at 1216 n.2 (agreeing with the Seventh Circuit's holding in *Garcia*); *Garcia*, 474 F.3d at 998 (noting that the facts of the case did not yet reach the level of mass surveillance).

<sup>115</sup> See *Garcia*, 474 F.3d at 997 (indicating that GPS tracking is on the same side as "the divide" with surveillance cameras and satellite imaging, which are not searches in Fourth Amendment terms). Judge Posner also rejected the idea that the police had seized the defendant's car because the device did not affect the appearance or function of the car in any way. See *id.*

<sup>116</sup> See *id.* at 997 (comparing the issue to wiretapping in order to record a suspect's conversation). In a wiretapping case, it is irrelevant whether law enforcement commits a trespass or not to record the conversation; it is a Fourth Amendment search either way. See *id.* Posner held that the issue of trespass was also irrelevant in GPS tracking cases. See *id.* He reasoned that GPS tracking was akin to surveillance by satellite, and the difference between satellite surveillance with a tracking device attached to the car and that without is a "distinction without any practical difference." See *id.*

<sup>117</sup> See *id.* at 998 (imagining law enforcement "affixing GPS devices to thousands of cars at random, recovering the devices, and using digital search techniques to identify suspicious driving patterns" as potentially unconstitutional).

<sup>118</sup> See *Marquez*, 605 F.3d at 609 (arguing that placement of the GPS tracking device on the vehicle was an unlawful search under the Fourth Amendment); *Pineda-Moreno*, 591 F.3d at 1214 (indicating that the holdings in *Knotts* and *Karo* did not apply here because the information gathered by the tracking device was obtainable simply by following the car, and therefore did not rise to the level of an invasive search).

<sup>119</sup> See *Marquez*, 605 F.3d at 610 (holding that the police may place a non-invasive GPS device on an automobile, and citing *Garcia*, 474 F.3d at 998); *Pi-*

luded to the *Knotts* exception in passing, but declined to consider the theory as a legitimate basis for requiring a warrant because the facts of neither case supported the idea that “mass surveillance” was actually being conducted.<sup>120</sup>

### B. “Prolonged Surveillance”

In the most recent case to reach a federal appellate court, the D.C. Circuit abandoned the reasoning of the other circuits.<sup>121</sup> In *United States v. Maynard*,<sup>122</sup> the defendants, Jones and Maynard, were convicted for conspiracy to distribute, and possession with intent to distribute cocaine and cocaine base.<sup>123</sup> In 2004, a task force began investigating the pair for narcotics violations, culminating in their arrest in October 2005.<sup>124</sup> As part of their investigation, the police attached a GPS tracking device to the underside of Jones’ automobile, and tracked his movements for twenty-four hours a day for four weeks, without a warrant.<sup>125</sup>

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*neda-Moreno*, 591 F.3d at 1216-17 n.2 (holding that neither attaching a GPS to the underside of an automobile nor following one on a public street is a Fourth Amendment search, and citing *Garcia*, 474 F.3d at 997).

<sup>120</sup> See *Marquez*, 605 F.3d at 610 (describing the surveillance in the case as nothing random or arbitrary but noting the dangers of “wholesale surveillance”); *Pineda-Moreno*, 591 F.3d at 1216-17 (reserving the need to address the issue until police utilize GPS tracking on a more larger scale).

<sup>121</sup> See *Maynard*, 615 F.3d at 558 (suggesting that the Seventh, Eighth, and Ninth Circuits failed to consider a prolonged surveillance theory).

<sup>122</sup> 615 F.3d 544 (D.C. Cir. 2010).

<sup>123</sup> See *id.* at 549 (characterizing the nature of the charges against the defendant).

<sup>124</sup> See *id.* (providing the factual history leading up to the defendants’ arrests and convictions). Jones and Maynard were the owner and manager of a nightclub in the District of Columbia. See *id.* The operation originally netted a number of other co-defendants, but all were acquitted or had their charges dropped, save for Jones and Maynard. See *id.* After a declaration of mistrial against Jones, and a withdrawal of a guilty plea by Maynard, the Government successfully brought new actions against Jones and Maynard that resulted in a conviction. See *id.*

<sup>125</sup> See *id.* at 555 (describing how the police used a GPS device to obtain a conviction). The automobile actually belonged to Jones’ wife, but the court noted that the non-ownership did not defeat his standing to object to the installation of the GPS unit. See *id.* at 555 n.2.

Jones challenged his conviction on the grounds that the police conducted an unreasonable search when they extensively monitored his movements without a valid warrant.<sup>126</sup>

Like all Fourth Amendment cases, the court began the inquiry by applying the *Katz* test, eventually determining that Jones' reasonable expectation of privacy had been violated in accordance with *Katz*.<sup>127</sup> In its analysis and application of *Katz* to the case before it, the court declined to follow *Knotts*, stating that *Knotts* was not controlling because the present case could be distinguished from it.<sup>128</sup> The D.C. Court cited the Supreme Court's reservation in *Knotts* as the basis for the distinction, and went on to clarify their interpretation of that reservation in contrast with that of the Seventh, Eighth, and Ninth Circuits.<sup>129</sup> Unlike the other Circuits, which indicated that the exception should be evaluated from a volume prospective, the D.C. Circuit chose to apply a time-based test.<sup>130</sup>

Based on its interpretation of *Knotts*, the D.C. Circuit found that Jones did not publicly expose his actions—actually or constructively—because the extended surveillance went beyond what was reasonably expected.<sup>131</sup> Although Jones knowingly exposed his movements to the public, the court reasoned that the

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<sup>126</sup> See *id.* at 555 (articulating the basis for appeal).

<sup>127</sup> See *id.* at 563 (reasoning that the search of Jones's vehicle definitively violated his reasonable expectation of privacy, and further "exceed[ed] the intrusions occasioned by every police practice the Supreme Court has deemed a search under *Katz* . . .").

<sup>128</sup> See *Maynard*, 615 F.3d at 555-56 (rejecting the Government's claim that *Knotts* is applicable to the case).

<sup>129</sup> See *id.* at 556-57 (finding that *Knotts* was not controlling because the present case falls under "dragnet" type surveillance).

<sup>130</sup> See *id.* (defining dragnet-type law enforcement as "prolonged 'twenty-four hour surveillance.>"). The D.C. Circuit emphasized that the constitutionality of this type of search should be measured by duration. See *id.* at 556-57.

<sup>131</sup> See *id.* at 558 (stating that Jones' movements were "not *actually* exposed to the public because the likelihood anyone will observe all these movements is effectively nil," and his movements were, "not exposed *constructively*...because that whole reveals far more—sometimes a great deal more — than does the sum of its parts — than the individual movements it comprises.").

police would be able to piece together these movements in order to create a picture that reflected more than Jones intended to expose.<sup>132</sup> This approach, known as a “mosaic theory,” coupled with the prolonged length of time the police conducted the surveillance, led the court to conclude that law enforcement had obtained an “intimate picture of the subject's life that he expect[ed] no one to have.”<sup>133</sup>

### III. Analysis

The disagreement between the Circuit Courts regarding law enforcement's use of warrantless GPS tracking devices is set to be resolved shortly.<sup>134</sup> The Supreme Court granted the government's petition to consider whether the warrantless use of a tracking device on one's vehicle to monitor its movements on

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<sup>132</sup> See *id.* at 563 (explaining that a reasonable person expects their everyday movements and details of their life to “remain ‘disconnected and anonymous.’”).

<sup>133</sup> See *id.* at 562, 563 (discussing how the sequence of a person's movements reveal more than their individual movements). The court illustrated the mosaic theory as follows:

Prolonged surveillance reveals types of information not revealed by short-term surveillance, such as what a person does repeatedly, what he does not do, and what he does ensemble. These types of information can each reveal more about a person than does any individual trip viewed in isolation. Repeated visits to a church, a gym, a bar, or a bookie tell a story not told by any single visit, as does one's not visiting any of these places over the course of a month. The sequence of a person's movements can reveal still more; a single trip to a gynecologist's office tells little about a woman, but that trip followed a few weeks later by a visit to a baby supply store tells a different story. A person who knows all of another's travels can deduce whether he is a weekly church goer, a heavy drinker, a regular at the gym, an unfaithful husband, an outpatient receiving medical treatment, an associate of particular individuals or political groups—and not just one such fact about a person, but all such facts.

*Id.* at 562.

<sup>134</sup> See *United States v. Jones*, 131 S. Ct. 3064, \*1 (2011) (granting certiorari to Jones).

public streets violates the Fourth Amendment, and in doing so, will hopefully resolve the difference between the circuits and provide the correct interpretation of *Knotts*.<sup>135</sup> In addition to granting the government's request to hear arguments on the issues decided by the D.C. Circuit in *Maynard*, the Supreme Court has requested the parties to prepare arguments on the question of "[w]hether the government violated respondent's Fourth Amendment rights by installing the GPS tracking device on his vehicle without a valid warrant and without his consent."<sup>136</sup> The installation question was added, presumably, to settle a matter left out of the original *Knotts* and *Karo* decisions.<sup>137</sup>

The expectation is that the Supreme Court will overturn the D.C. Circuit and reject the argument that installation of a tracking device constitutes a search under the Fourth Amendment.<sup>138</sup> Despite the absence of well established law in the area, lower courts have routinely rejected the argument that installation of a tracking device is a Fourth Amendment search or seizure.<sup>139</sup> Although the *Karo* decision was not based on the installation of a tracking device to the actual automobile, the Court held that the appropriate analysis focused on whether a privacy

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<sup>135</sup> See *id.* (summarizing the issue to be heard on appeal).

<sup>136</sup> *Id.* (directing the parties to answer the relevant issue).

<sup>137</sup> See Orin Kerr, *Supreme Court Agrees to Review Case on GPS and the Fourth Amendment*, THE VOLOKH CONSPIRACY, June 27, 2011, archived at <http://www.webcitation.org/62F5xkLX2> (discussing the immediate implications of the Supreme Court's decision to grant certiorari). In *Knotts*, the Court chose to pass on the issue of installation because the defendant never raised the question. See *Knotts*, 460 U.S. at 286 (Brennan, J., concurring). While *Karo* touched upon the issue of installation, the Court never reached a definitive rule because they relied on the fact that the device was first installed into a container owned by the police, and then transferred to Karo, and did not need to consider the implications of installing a device onto property owned by Karo. See *Karo*, 468 U.S. at 711.

<sup>138</sup> See Kerr, *supra* note 137 (suggesting that while the *Jones* case may be particularly fascinating, in all likelihood the government will win).

<sup>139</sup> See Kerr, *supra* note 137 (describing how lower courts have ruled on this issue).

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interest was being violated.<sup>140</sup> The *Karo* Court determined that mere transfer of an inactive tracking device could not be a search under the Fourth Amendment because an inactive monitor conveys no information.<sup>141</sup> Although GPS offers a far greater quantity of data to law enforcement than traditional beeper tracking, at the very most, the actual installation of the GPS unit creates a greater “potential for an invasion of privacy.”<sup>142</sup> This invasion, however, is not an actual invasion, and the Court does not consider potential invasions a search under the Fourth Amendment.<sup>143</sup> Under the current interpretation of the holdings in *Knotts*, *Karo*, and *Katz*, GPS tracking is constitutionally permissible on public ways because what one “knowingly exposes” to the public is not protected by the Fourth Amendment.<sup>144</sup> The Court reasoned that in these cases, a knowing exposure of information necessarily prevents a finding that there is a reasonable expectation of privacy, and without a reasonable expectation of privacy, there can be no Fourth Amendment search.<sup>145</sup>

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<sup>140</sup> See *Karo*, 468 U.S. at 712 (focusing its rationale on the transferring of the container to the defendant and the information conveyed during that transfer). In *Karo* the tracking device was inside a container, which was then transferred into the defendant’s car, not attached directly to his car. See *id.* at 708-09.

<sup>141</sup> See *id.* at 712 (finding no privacy interest violated because the device was not conveying information to law enforcement, and therefore, there was no private information shared).

<sup>142</sup> See *id.* (illustrating in depth the reason why no search occurred in this circumstance).

<sup>143</sup> See *id.* at 712-13 (supporting this assertion by explaining that “[i]t is the exploitation of technological advances that implicates the Fourth Amendment, not their mere existence.”).

<sup>144</sup> See Otterberg, *supra* note 22, at 683-85 (summarizing the holding in *Katz*, and the effects of *Knotts* and *Karo*).

<sup>145</sup> See *Karo*, 468 U.S. at 712 (finding that transferring the can of ether did not infringe on privacy interests because it transmitted no private information); *Knotts*, 460 U.S. at 282 (determining that *Knotts* knew his movements were being broadcasted to the public and could not have had a reasonable expectation of privacy); *Katz*, 389 U.S. at 352 (stating that a conversation in a public telephone booth was not broadcast to the public and thus not knowingly exposed).

### A. Considering Additional Factors

Although the “knowing exposure” doctrine remains an important part of Fourth Amendment analysis, some commentators argue that factors that have been considered in other Fourth Amendment technology cases should be considered to better reflect the spirit of the Amendment.<sup>146</sup> Factors that should also be considered include whether the technology is in general use by the public, the nature of the information being revealed, and the manner in which the technology is being used.<sup>147</sup> Additionally, economic and social policies also suggest that the installation and monitoring of GPS tracking devices should be regulated in some way.<sup>148</sup>

#### i. General Availability of the Technology

In *Kyllo*, the Supreme Court indicated that the level of actual police involvement in the case was affected, at least in part, by the degree of general use of the technology in question.<sup>149</sup> In theory, this means that the greater the availability of a technological device, the less privacy one can expect from that device, so that one could not expect Fourth Amendment protection from commonly used technology.<sup>150</sup> There is little doubt that GPS

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<sup>146</sup> See Haley Plourde-Cole, *Back to Katz: Reasonable Expectation of Privacy in the Facebook Age*, 38 FORDHAM URB. L.J. 571, 586 (2010) (considering many factors in addition to the typical application of the *Katz* test).

<sup>147</sup> See *id.* (listing these factors despite the “convoluted nature” of the *Katz* test).

<sup>148</sup> See discussion *infra* Part III.A.iv-v (discussing various alternatives of regulating the use of GPS for police investigations).

<sup>149</sup> See *Kyllo*, 533 U.S. at 34 (asserting that technology used by police, and not by the general public, is looked at with more skepticism); *Dow Chem.*, 476 U.S. at 238-39 (stating that enhanced vision through an electronic device does not necessarily violate a defendant’s privacy rights). “It may well be . . . that surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public . . . might be constitutionally proscribed absent a warrant.” *Id.* at 238.

<sup>150</sup> See John S. Ganz, *It’s Already Public: Why Federal Officers Should Not Need Warrants to Use GPS Vehicle Tracking Devices*, 95 J. CRIM. L. & CRIMINOLOGY 1325,

technology is becoming increasingly commonplace in both government and consumer applications.<sup>151</sup>

However, the mere availability of the technology is not enough to influence the Fourth Amendment analysis; it must also be demonstrated that society has accepted that the technology may be used for law enforcement purposes.<sup>152</sup> There is little to support this finding.<sup>153</sup> Media sources reporting on instances of secret government tracking handled the issue with “controversy and concern,” suggesting that the public is not ready to accept that the government may use GPS against them without the sup-

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1341-42 (2005) (summarizing the implications of *Kyllo* and *Dow Chemical* on the use of GPS in police investigations).

<sup>151</sup> See Brief of Amicus Curiae Elec. Privacy Info. Ctr. (EPIC) in Support of Appellant at \*6-8, *Commonwealth v. Connolly*, 913 N.E.2d 356 (2010) (No. SJC-10355), 2009 WL 1247272 (stating that since GPS service became fully operational in 1993, the availability and use of such devices has grown); Ganz, *supra* note 150, at 1343-47 (describing the integration of GPS technology into modern vehicles, and the various uses associated with it). In addition to using GPS for criminal surveillance purposes, the federal government has mandated the installation of GPS on cars in six states as part of a mileage tax program. See Brief of Amicus Curiae Elec. Privacy Info. Ctr. (EPIC) in Support of Appellant at \*6-8, *Commonwealth v. Connolly*, 913 N.E.2d 356 (2010) (No. SJC-10355), 2009 WL 1247272. The program has also been discussed at the state level. See *id.* See also Road User Study, archived at <http://www.webcitation.org/5xa16Fu6G> (referring to another program that places a tax on motor fuel). GPS is also being increasingly incorporated into consumer products, most commonly visible in onboard navigation systems in automobiles and cell phones. See Ganz, *supra* note 150, at 1343-47. However, GPS can also be found in telematics and fleet management systems, passenger car tracking devices, and anti-theft systems. See *id.* at 1343-45. Personal automobile tracking devices can easily be purchased on the Internet. See, e.g., SmartTracker, ROCKY MOUNTAIN TRACKING, INC., archived at <http://www.webcitation.org/5xgXan7tq>.

<sup>152</sup> See Plourde-Cole, *supra* note 146, at 623 (stating that “familiarity with a certain technology does not indicate that it is per se reasonable under the Fourth Amendment.”).

<sup>153</sup> See *Connolly*, 913 N.E.2d at 369 (noting that “despite the increasing use of sophisticated technological devices, there has not been a corresponding societal expectation that government authorities will use such devices to track private citizens . . .”).

port of a warrant.<sup>154</sup> Even when individuals use GPS systems through a third party provider, and therefore lose any reasonable expectation that the information from the GPS will remain private, it has been suggested that the public expects the provider to keep the information secure.<sup>155</sup>

Additionally, there is little to suggest that the public believes GPS devices will be used against them as tracking devices. Although the Internet is full of GPS products which could be used for tracking purposes, many are marketed as “anti-theft” devices, intended to be used for management of one’s own property.<sup>156</sup> Some states have already responded to the rise of commercially available GPS tracking devices by outlawing the use of electronic tracking devices against other individuals.<sup>157</sup> Again, this suggests that the public is not yet ready to accept that they may be unknowingly tracked by either a member of the public, or the government, without cause.

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<sup>154</sup> See Plourde-Cole, *supra* note 146, at 623-24 (providing a number of examples of recent cases of government tracking which have been carried as news stories in mainstream media outlets). Plourde-Cole notes that support for requiring GPS tracking spans across the New York Times, Utah Daily Herald, Newsweek Magazine, and National Public Radio. *See id.*

<sup>155</sup> See *United States v. Miller*, 425 U.S. 435, 443 (1976) (finding that even information that is provided to a third party with the expectation that it remain confidential is not protected by the Fourth Amendment); *see also Smith*, 442 U.S. at 742-43 (communicating that information transmitted through a third party service loses all reasonable expectation that the information will be kept private). In *Smith*, the Supreme Court held that the installation and use of a pen register to record the numbers being dialed by the defendant was not a search under the Fourth Amendment. *See id.* at 742. The Court reasoned that the defendant could have no reasonable expectation of privacy since the numbers would be transmitted to and recorded by the phone company. *See id.* at 743.

<sup>156</sup> See, e.g., *SmartTracker*, *supra* note 151 (indicating that live tracking through web-based software can help with prosecutions).

<sup>157</sup> See DEL. CODE ANN. tit. 11, § 1335 (West 2011) (grouping the use of GPS with other privacy violations caused by technology); TENN. CODE ANN. § 39-13-606 (West 2011) (making it a criminal offense to “install, conceal, or otherwise place an electronic tracking device in or on a motor vehicle” for purposes of tracking); TEX. PENAL CODE ANN. § 16.06 (West 2011) (making it a misdemeanor to install a tracking device on another’s motor vehicle).

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*ii. Manner in which the Technology is Being Used*

In *Knotts*, the Court held that science and technology may be used in a manner which enhances the natural “sensory faculties bestowed upon [the police] at birth” without constituting a search under the Fourth Amendment.<sup>158</sup> However, since the *Knotts* decision, the Court has recognized limits to the use of sensory enhancement technology, stating that it may be used in such a way which augments sensory capacities, though not replacing them altogether.<sup>159</sup> As the federal courts have recognized in both the mass surveillance and prolonged surveillance cases, GPS tracking is not merely sense enhancing technology because it goes “beyond what is practically possible to obtain through visual surveillance . . . .”<sup>160</sup> The courts’ main concerns—the number of people being tracked or the duration and extent of the tracking—are both realistically beyond the capabilities of traditional visual surveillance techniques because, “[c]ompared to visual surveillance, electronic tracking requires less manpower, is more reliable..., and carries a lower risk of detection.”<sup>161</sup> The lower costs associated with GPS use means that law enforcement can significantly increase the number of vehicles monitored by continuous

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<sup>158</sup> See *Knotts*, 460 U.S. at 282 (comparing the capabilities of police visual surveillance with that of beeper tracking surveillance).

<sup>159</sup> See *Kyllo*, 533 U.S. at 34 (recognizing that the use of a thermal imager was a sense-enhancing device, but it enhanced the sense in a way that went beyond what was humanly possible). Since it would have been entirely impossible for the police to gain the information they did without the use of the device, it was considered a search under the Fourth Amendment. See *id.* at 34-35. See also Shah, *supra* note 92, at 289 (pointing out that GPS devices collect data on a much greater scale than manually possible); Jackson, 76 P.3d at 223 (stating that GPS does “not merely augment the officers’ senses, but rather provides a technological substitute for traditional visual tracking.”).

<sup>160</sup> See Otterberg, *supra* note 22, at 701 (arguing that monitoring a GPS device should be considered a search because it collects an extensive amount of detail about one’s life and records it in a database that is accessible to law enforcement at any time).

<sup>161</sup> See Penney, *supra* note 59, at 519 (stressing the advantages of electronic surveillance).

surveillance.<sup>162</sup> In order for police to conduct an investigation similar to the potential offered by GPS tracking, “law enforcement would require, at a minimum, millions of additional police officers and cameras on every street lamp.”<sup>163</sup> GPS goes far beyond merely enhancing law enforcement’s sensory capabilities and is more than just an alternative to traditional visual surveillance.<sup>164</sup>

### *iii. Nature of the Information Being Obtained*

The Court also takes into consideration the nature of the information being obtained by the police, and is reluctant to allow investigations to proceed without warrants where there is a potential for “intimate” information to be gathered.<sup>165</sup> On the other hand, the Court has upheld warrantless searches that are designed to detect purely contraband items.<sup>166</sup> The Court recognized in *Maynard* that while the purpose of the surveillance may be to detect illegal activity, the threat of revealing overly intimate information is quite high.<sup>167</sup> The longer law enforcement conducts surveillance, the more likely it is that it will collect intimate information on its subject beyond what the subject knowingly

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<sup>162</sup> See *Holden*, 2010 WL 5140744, at \*2 (noting how law enforcement can use GPS technology in more ways than just visual surveillance).

<sup>163</sup> See *Weaver*, 909 N.E.2d at 1199 (comparing visual surveillance to that of electronic tracking devices).

<sup>164</sup> See *Holden*, 2010 WL 5140744, at \*8 (granting defendant’s motion to suppress evidence collected in violation of his Fourth Amendment rights because the degree to which GPS assisted law enforcement in obtaining evidence represented a clear privacy invasion).

<sup>165</sup> See *Kyllo*, 533 U.S. at 33 (stating that privacy expectations are heightened in a private home). Justice Scalia found it disturbing that the police could, in theory, discover when the lady of the house was taking her bath. See *id.* at 38.

<sup>166</sup> *Illinois v. Caballes*, 543 U.S. 405, 405 (2005) (analyzing law enforcement’s use of a drug sniffing dog to detect narcotics during routine traffic stops). The Supreme Court held that use of the dog was not a search under the Fourth Amendment because the dog was trained to alert police only to illegal contraband, and one cannot have a reasonable expectation of privacy in illegal contraband. See *id.*

<sup>167</sup> See *Maynard*, 615 F.3d at 562 (finding that prolonged surveillance has the potential to reveal intimate details about the target).

exposes to the public.<sup>168</sup> Prolonged surveillance has the ability to reveal intimate knowledge about an individual, but the court cannot limit the prohibition just to the intimate information because this would be an unworkable balance between the needs of law enforcement and individual liberty.<sup>169</sup> For the time being, the prolonged surveillance interpretation of the *Katz* exception offers the best solution for this limitation problem.

#### *iv. Economic Perspective*

Steven Penny, of the University of Alberta, argues that the technological advantages of GPS threaten to upset a natural economic balance between efficient law enforcement and individual privacy rights.<sup>170</sup> Economic factors force law enforcement to make discretionary decisions about whom to place under surveillance based on cost and expected return; they focus their limited resources on those most likely to be engaged in illegal activity because it is most likely to lead to arrest.<sup>171</sup> However, the inexpensive nature of GPS surveillance compared to traditional police tracking allows for a greater number of suspects to be monitored for the same economic cost, thereby permitting the police to monitor even those with a decreased proclivity toward criminal

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<sup>168</sup> See *id.* (defining the “mosaic theory,” and relying upon it to determine the outcome of the case). The court reasoned that law enforcement may, over time, be able to put together information that on its own would not be considered intimate, but when viewed more broadly would potentially reveal something the target never intended to make public. See *id.* The longer police collect information on a subject, the more likely they are to obtain information it can use to create a “mosaic” of the target’s life. See *id.*

<sup>169</sup> *Kyllo*, 533 U.S. at 38 (citing *Oliver v. United States*, 466 U.S. 170, 181 (1984), and quoting that limiting the prohibition of thermal imaging to intimate details would fail to “provide ‘a workable accommodation between the needs of law enforcement and the interests protected by the Fourth Amendment.’”).

<sup>170</sup> See Penny, *supra* note 59 at 523 (concluding that the economic costs of unregulated GPS tracking outweigh the economic benefits).

<sup>171</sup> See Penny, *supra* note 59, at 521 (explaining that the risk of being the subject to police surveillance is low for those who are not engaged in criminal activity).

conduct while still maintaining a positive cost-benefit analysis.<sup>172</sup> Absent the restraint of probable cause and cost, law enforcement will identify more criminals engaging in illegal conduct, but they will also subject a greater number of innocent people who are not engaging in criminal activity to electronic surveillance.<sup>173</sup> Although some argue that the police would not target a suspect without an actual suspicion, Penney argues that “the incentives bearing on [police] tilt heavily against investigative restraint.”<sup>174</sup>

#### *v. Social Perspective*

Lastly, Alex Kozinski, Chief Judge of the Ninth Circuit, argues that unregulated electronic surveillance has a discriminatory social impact.<sup>175</sup> In a passionate dissent to the denial to hear *Pineda-Moreno* reheard *en banc*, Chief Judge Kozinski argued that the court’s decision was an injustice to the disenfranchised because warrantless GPS tracking is far more likely to be used against the poor than it is the upper class.<sup>176</sup> Describing the process of surreptitiously attaching a GPS tracking device as

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<sup>172</sup> See Penney, *supra* note 59, at 521 (arguing that police could choose to monitor those “in a ‘high crime’ area or in the proximity of a suspected criminal or terrorist” because of the ease of deploying GPS monitoring cheaply over a large geographic area).

<sup>173</sup> See Penney, *supra* note 59, at 522 (citing the potential for capturing information on non-criminal behavior as a cost of unregulated electronic tracking). If electronic surveillance was not available, law enforcement officials would be unable to identify more criminals engaging in criminal conduct because they would not be able to use the information obtained from the electronic surveillance to support a warrant to conduct a search. See *id.* at 492.

<sup>174</sup> See Penney, *supra* note 59, at 501 (evaluating the weaknesses in a plan to allow law enforcement to monitor themselves in order to prevent breaches of privacy).

<sup>175</sup> See *United States v. Pineda-Moreno*, 617 F.3d 1120, 1123 (9th Cir. 2010) (Kozinski, C.J., dissenting) (contending that just because an unruly individual may commit certain acts upon an individual’s property, this does not give law enforcement the same authority to perform unreasonable searches and seizures under the Fourth Amendment).

<sup>176</sup> See *id.* at 1123 (stating that “poor people are entitled to privacy, even if they cannot afford all the gadgets of the wealthy for ensuring it.”).

“creepy and un-American,”<sup>177</sup> Chief Judge Kozinski accused his colleagues of “unselfconscious cultural elitism” for failing to see the full-scale negative effects of the practice because they were so far removed from the likely targets of such an investigation.<sup>178</sup> According to Chief Judge Kozinski, the wealthy are more likely to establish boundaries to establish a reasonable expectation of privacy that cannot be infringed by law enforcement.<sup>179</sup> The poor, on the other hand, are unable to afford such protections, and it is left open to the discretion of law enforcement to decide whether or not to install and monitor a tracking device.<sup>180</sup> Chief Judge Kozinski believes electronic tracking should be recognized as a search requiring a warrant in order to prevent personal privacy from becoming a distant memory.<sup>181</sup>

### *B. A Suggested Model of Regulation*

Although courts have found the installation of a tracking device is only a minimal invasion of one’s property rights, and that the subsequent monitoring does not violate a reasonable expectation of privacy, the factors discussed in Part III.A indicate that not only is the public not ready to accept that the use of prolonged GPS tracking is reasonable, but that there are social and economic incentives favoring regulating electronic tracking devices as Fourth Amendment searches.<sup>182</sup> The Court should adopt

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<sup>177</sup> See *id.* at 1126 (indicating that underhanded behavior of strangers is not consistent with American values).

<sup>178</sup> See *id.* at 1123 (criticizing his colleagues for not understanding the differences between a trailer park and a gated community).

<sup>179</sup> See *id.* at 1123 (offering examples of ways in which those who can afford it buffer themselves against privacy invasions such as “electric gates, tall fences, security booths, remote cameras, motion sensors[,] and roving patrols....”).

<sup>180</sup> See *id.* (arguing that the “Constitution doesn’t prefer the rich over the poor; the man who parks his car next to his trailer is entitled to the same privacy and peace of mind as the man whose urban fortress is guarded by the Bel Air Patrol.”).

<sup>181</sup> See *Pineda-Moreno*, 617 F.3d. at 1121 (chastising his colleagues for their lenient attitude toward the demands of law enforcement).

<sup>182</sup> See *Knotts*, 460 U.S. at 285 (finding electronic tracking does not violate a reasonable expectation of privacy); *United States v. Michael*, 645 F.2d 252, 259 (5th Cir. 1981) (stating that the attachment of a tracking device is technically a

a standard that utilizes both reasonable suspicion and probable cause in order to develop regulations to better protect personal privacy while maintaining the opportunity for efficient police work.<sup>183</sup>

*i. Installation, Short Term Monitoring and Reasonable Suspicion*

Even though police intrusions into private life do not amount to a “full” search or seizure when there is only a minimal invasion, one should not be completely unprotected by the Fourth Amendment.<sup>184</sup> To determine the extent to which a government action should be precluded under the Fourth Amendment, the government interest of engaging in the action must be weighed against the private interest of preventing the action.<sup>185</sup> For the government, installing and monitoring a tracking device leads to more efficient, successful, and safer police work.<sup>186</sup> On the other hand, the private interest violated is minimal, at least in the case of short term monitoring, because one has a diminished expectation of privacy in their automobiles.<sup>187</sup> Often, when the

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trespass, but only a minor intrusion); *United States v. Sparks*, 750 F. Supp. 2d 384, 391 (D. Mass. 2010) (concluding that a defendant did not have an objectively reasonable expectation of privacy in the exterior of his vehicle).

<sup>183</sup> See *Terry*, 392 U.S. at 27 (utilizing reasonable suspicion and probable cause as a way of differentiating between the scope of a search).

<sup>184</sup> See *id.* at 19 (rejecting the notion “that the Fourth Amendment does not come into play at all as a limitation upon police conduct if the officers stop short of something called a ‘technical arrest’ or a ‘full-blown search.’”).

<sup>185</sup> See *Camara v. Municipal Court*, 387 U. S. 523, 534-37 (1967) (stating that one should “focus upon the governmental interest which allegedly justifies official intrusion upon the constitutionally protected interests of the private citizen[.]” for there is “no ready test for determining reasonableness other than by balancing the need to search [or seize] against the invasion which the search [or seizure] entails.”).

<sup>186</sup> See ALISON M. SMITH, CONG. RESEARCH SERV., R41663, LAW ENFORCEMENT USE OF GLOBAL POSITIONING (GPS) DEVICES TO MONITOR MOTOR VEHICLES: FOURTH AMENDMENT CONSIDERATIONS 10-11 (2011), archived at <http://www.webcitation.org/62Hy2yV8A> (describing the arguments used by proponents of warrantless GPS tracking).

<sup>187</sup> See *Cardwell*, 417 U.S. at 590 (explaining that one has a “lesser expectation of privacy in a motor vehicle” because it is not typically one’s home or place of personal storage).

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Court feels that the government interest outweighs private interests, but recognizes the need for maintaining some boundary between the two, the reasonable suspicion standard is utilized.<sup>188</sup> The Court should utilize the reasonable suspicion standard for both the installation of the tracking device and short term monitoring because they represent only a minor, but actual, intrusion into privacy interests.<sup>189</sup>

Using a reasonable suspicion standard is advantageous because it does not overburden law enforcement by requiring them to initially obtain a warrant, but does require that the police actually have an objective basis for investigating.<sup>190</sup> In many cas-

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<sup>188</sup> See, e.g., *New Jersey v. T.L.O.*, 469 U.S. 325, 341 (1985) (exemplifying how public interests may supersede a person's expectation of privacy). The Court found that balancing

the privacy interests of schoolchildren with the substantial need of teachers and administrators for freedom to maintain order in the schools does not require strict adherence to the requirement that searches be based on probable cause to believe that the subject of the search has violated or is violating the law.

*Id.* The theory that tracking device installation and monitoring should be based on a standard of reasonable suspicion is not a novel one. See *Karo*, 468 U.S. at 718 n.5 (reserving the issue of whether reasonable suspicion or probable cause should be required to track within a home); *Michael*, 645 F.2d at 258 (finding that reasonable suspicion that the defendant was engaged in criminal activity was sufficient to support the installation of a tracking device on the defendant's car).

<sup>189</sup> See *Arizona v. Hicks*, 480 U.S. 321, 338 (1987) (O'Connor, J., concurring) (supporting a reasonable suspicion standard for cursory examinations); see also *Knotts*, 460 U.S. at 283-84 (finding that "twenty-four hour surveillance" may be different from less-intrusive tracking) (citation omitted); Brief for the United States at \*47-48 *United States v. Jones*, 131 S. Ct. 3064 (2011) (No. 10-1259) 2011 WL 3561881 at \*47-48 (admitting that the installation and monitoring of GPS may be minimally intrusive).

<sup>190</sup> See Brief for the United States at 49, *Jones*, 131 S. Ct. 3064 (No. 10-1259) (listing examples of where the Court "recognize[d] various types of police activities that amount to searches or seizures, but need not be justified by a warrant or probable cause"); *Terry*, 392 U.S. at 27 (requiring that the officer's decision to conduct a stop be based on reason). See also BLACK'S LAW DICTIONARY 1585 (9th ed. 2009) (defining reasonable suspicion as "[a] particularized and

es, police will have met the reasonable suspicion burden even without the requirement to do so, simply because it is more efficient to install tracking devices on vehicles which one already suspects of criminal activity.<sup>191</sup> However, without a limitation, the falling cost of GPS suggests that police will become more likely to install tracking devices to whomever they please, without individualized suspicion.<sup>192</sup>

*ii. Prolonged Surveillance and Probable Cause*

As GPS monitoring becomes more extensive, the police should have to satisfy a higher burden in order to justify their intrusion into suspects' privacy.<sup>193</sup> Both the prolonged surveillance and mass surveillance theories used by the circuit courts represent examples of when GPS enables law enforcement to engage in dragnet-type law enforcement.<sup>194</sup> The factors discussed *supra* suggest that the prolonged surveillance in particular allows the police to gather information that the public is not reasonably intending to display to the outside world, and should be protected by a warrant supported by probable cause.<sup>195</sup> The government argues that requiring a warrant and probable cause before installing a tracking device "would seriously impede the

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objective basis, supported by specific and articulable facts, for suspecting a person of criminal activity.").

<sup>191</sup> See Penney, *supra* note 59, at 521 (explaining that police tend to choose to focus their investigations on those already suspected of criminal activity).

<sup>192</sup> See Penney, *supra* note 59, at 521 (discussing how the falling cost of tracking devices may lead police to track even those about whom they do not harbor an individual suspicion of wrongdoing).

<sup>193</sup> See John P. Cronan, Note, *Subjecting the Fourth Amendment to Intermediate Scrutiny: The Reasonableness of Media Ride-Alongs*, 17 YALE L. & POL'Y REV. 949, 953 (1999) (arguing that there should be balance between the competing interests of the suspect and society, and that "the more intrusive the government action, the greater the required justification.").

<sup>194</sup> See *Maynard*, 615 F.3d at 556 (discussing the Supreme Court's reservation of the dragnet question); *Garcia*, 474 F.3d at 997-98 (imagining the possible actions law enforcement could take with GPS surveillance).

<sup>195</sup> See *supra* Parts III.A.i-v and accompanying notes (discussing additional factors the Court should consider when deciding if GPS tracking constitutes a search).

government's ability to investigate leads and tips on drug trafficking, terrorism, and other crimes...[and that] [l]aw enforcement officers could not use GPS devices to gather information to establish probable cause, which is often the most productive use of such devices."<sup>196</sup> However, under the proposed system, police will be able to conduct short term, investigatory surveillance with a minimal showing of reasonable suspicion, similar to the initial seizure of an individual in a *Terry* stop.<sup>197</sup> Like in a *Terry* stop, the police will be able to use the information gained during this initial investigation to support a finding of probable cause, and justify further prolonged surveillance under a warrant to collect additional evidence.<sup>198</sup>

Opponents to the prolonged surveillance theory take the position that the police require clear rules if they are to avoid improper application of the Fourth Amendment.<sup>199</sup> They argue that a decision affirming *Maynard* would be "vague and unworkable," and would create enormous problems for criminal investigators.<sup>200</sup> Specifically, the Department of Justice stated that the prolonged surveillance theory relied upon in *Maynard* would invalidate itself by finding evidence which was initially collected legally, as "fruit of the poisonous tree" once the warrantless tracking went beyond a length of time the court deemed reasonable.<sup>201</sup> However, the Court has required law enforcement to act

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<sup>196</sup> See Brief for the United States at 50, *Jones*, 131 S. Ct. 3064 (No. 10-1259) (advocating for no probable cause requirement for GPS tracking devices).

<sup>197</sup> See *Terry*, 392 U.S. at 23 (noting that it would have been a failure of police duty to not follow up on suspicious activity).

<sup>198</sup> See *id.* at 10 (affirming that "[i]f the 'stop' and the 'frisk' give rise to probable cause to believe that the suspect has committed a crime, then the police should be empowered to make a formal 'arrest,' and a full incident 'search' of the person.").

<sup>199</sup> See *Sparks*, 750 F. Supp. 2d at 392 (recounting how law enforcement needs clear rules in the Fourth Amendment context).

<sup>200</sup> See Brief for Appellee's Petition for Rehearing En Banc at 13-14, *United States v. Jones*, 615 F.3d 544 (2010) (No. 08-3034) (arguing that electronic tracking is no different than basic visual surveillance).

<sup>201</sup> See *id.* at 14 (arguing that because evidence can still be collected without a warrant in short length tracking, law enforcement must determine what an

under a reasonable test in the past, and has suppressed otherwise admissible evidence when their actions move into the unreasonable.<sup>202</sup> The Roberts Court in particular has increasingly relied upon a balancing test to decide whether a warrantless search is reasonable.<sup>203</sup>

#### IV. Conclusion

As Justice Scalia remarked, “[a]pplying the Fourth Amendment to new technologies may sometimes be difficult, but when it is necessary to decide a case [the Supreme Court has] no choice.”<sup>204</sup> While technology can be a great boon to law enforcement, it can also threaten to erode individual privacy expectations. The falling cost and rising use of GPS tracking by law enforcement threatens to upset the balance society has developed between the expectations of the police and the public’s own privacy expectations. By adopting standards to regulate the use of GPS installation and monitoring the Court can maintain this balance. Requiring reasonable suspicion to install and initially monitor tracking devices, and a warrant supported by probable cause for extended GPS enhanced monitoring will not drastically affect the way police conduct surveillance.

Under these proposed guidelines, when law enforcement does choose to install and monitor a tracking device on a suspect’s automobile, they must only make a minimal showing that they have an objective basis for suspecting criminal activity. While the hurdle is small, it prevents police from conducting

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unreasonable length of time is to prevent that evidence from being suppressed).

<sup>202</sup> See *Terry*, 392 U.S. at 18-19 (describing how “[t]his Court has held in the past that a search which is reasonable at its inception may violate the *Fourth Amendment* by virtue of its intolerable intensity and scope.”) (citations omitted).

<sup>203</sup> See William W. Greenhalgh, *FOURTH AMENDMENT HANDBOOK X* (3rd ed. 2010) (introducing recent developments in Fourth Amendment law). This test, put simply, asks, “whether the government’s need to make the warrantless and/or suspicionless intrusion outweighs the liberty or privacy interest at stake.” *Id.*

<sup>204</sup> *City of Ontario v. Quon*, 130 S. Ct. 2619, 2635 (2010) (Scalia, J., concurring).

“fishing expeditions” by installing tracking devices on those who they have no reason to suspect of wrongdoing. Police would be free to conduct short term GPS surveillance as initial investigatory tool, which may lead them to clear a suspect, or provide evidence that would support probable cause for arrest. Alternatively, where law enforcement feels that more prolonged surveillance is necessary to collect further evidence, the information obtained during this time period could be used to support a warrant. By requiring a warrant at this stage, the Court can protect information which the public expects to remain private, considering the nature of the information revealed, manner in which the technology is used, and the general availability of the technology, and in doing so, can better maintain a proper economic and social balance between law enforcement and personal liberties which technology has threatened to upset.