

FROM BEEPERS TO GPS: CAN THE FOURTH AMENDMENT KEEP UP WITH ELECTRONIC TRACKING TECHNOLOGY?

Ramya Shah*

I. INTRODUCTION

In the 2004 trial of Scott Peterson for the murder of his wife Laci Peterson, a Global Positioning System (“GPS”) unit attached to Scott Peterson’s vehicle provided the evidence police needed to tie Peterson to the murder.¹ In another incident, Washington D.C.-area police were able to catch a rapist by installing GPS units on his vehicle and tracking his movements until he led police to a wooded area where he was about to attack another victim.² These are just two examples of increasing police reliance on GPS technology to gather crucial evidence by electronically tracking suspects’ vehicles. At first blush, police reliance on this technology seems remarkable as it leads to unique investigative opportunities. Nonetheless, courts must tread carefully with regards to the use of GPS and its compliance with the Fourth Amendment. Like other technological advances before it, GPS technology can further narrow privacy rights. So far, courts around the country faced with warrantless use of GPS issues have relied on the reasoning from older “beeper cases”—cases regarding the use of miniature radio transmitters that allow police to electronically track the device.³

As GPS technology becomes ubiquitous, the need to examine the GPS issue in its own right becomes more pressing. Part II of this Recent Development offers a brief overview of the Fourth Amendment and an explanation of GPS technology. Part III provides a discussion of law enforcement’s use of electronic tracking devices in the context of the Fourth Amendment. Part III also presents arguments and concerns regarding the use

* J.D., University of Illinois College of Law, 2009; B.S., Management, Purdue University, 2000. I am grateful to Ajay Shah and Ram Lokan for their generous support and guidance. I also wish to thank the Journal of Law, Technology and Policy for giving me the opportunity to write this piece.

1. *Judge Allows GPS Evidence in Peterson Case*, CNN.COM, Feb. 17, 2004, <http://www.cnn.com/2004/LAW/02/17/peterson.trial/index.html>.

2. Ben Hubbard, *Police Turn to Secret Weapon: GPS Device*, WASH. POST, Aug. 13, 2008, at A1, available at http://www.washingtonpost.com/wp-dyn/content/article/2008/08/12/AR2008081203275.html?nav=rss_metro/va.

3. Note, *Tracking Katz: Beepers, Privacy, and the Fourth Amendment*, 86 YALE L. J. 1461, 1461 (1977).

of beepers as tracking devices and suggests that those arguments may be applied to GPS devices as well. Part IV proposes that courts take a new direction in their application of the Fourth Amendment to these issues.

II. BACKGROUND

As a brief overview, the first part of this section introduces the Fourth Amendment's privacy protections. The second part of this section explains the technology, capabilities, and uses of GPS devices.

A. *The Fourth Amendment: A Brief Overview*

The Fourth Amendment of the United States Constitution guarantees the right of the people to be free from unreasonable searches and seizures by the government.⁴ It was incorporated to the states under the Due Process Clause of the Fourteenth Amendment.⁵ A "search" is defined as a government action that infringes on an individual's reasonable expectation of privacy.⁶ The Fourth Amendment also has been interpreted to generally include a warrant requirement.⁷ This requirement places an important limit on the power of the government to infringe on an individual's privacy.⁸ By applying an objective standard, it assures that law enforcement has secured information to guarantee the necessity of the search.⁹ Thus, absent particular exceptions, police must have probable cause to obtain a warrant, made by oath or affirmation, which particularly describes place and items to be searched.¹⁰

In *Katz v. United States*, the Supreme Court reasoned that the Fourth Amendment's privacy protections apply to "people, not places."¹¹ In his concurrence, Justice Harlan formulated a test to determine whether police activity is a search under the Fourth Amendment. Harlan's widely-used test stands for the proposition that a police activity is a search if (1) the individual has exhibited an actual expectation of privacy and, (2) society is prepared to recognize this expectation as reasonable.¹² Under this test, the target of the putative search has to show that (1) the information the police seek to admit is something that the individual meant to keep away from the public and (2) the information is such that it is objectively reasonable for this individual to want to keep it private.¹³ With some exceptions, notably the automobile exception¹⁴,

4. U.S. CONST. amend. IV.

5. *Mapp v. Ohio*, 367 U.S. 643, 655–56 (1961).

6. *United States v. Jacobsen*, 466 U.S. 109, 113 (1984).

7. *Maryland v. Dyson*, 527 U.S. 465, 465 (1999) ("The Fourth Amendment generally requires police to secure a warrant before conducting a search.").

8. PHILLIP A. HUBBART, MAKING SENSE OF SEARCH AND SEIZURE LAW: A FOURTH AMENDMENT HANDBOOK 130 (2005).

9. *Id.*

10. U.S. CONST. amend. IV.

11. 389 U.S. 347, 351 (1967).

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

13. PHILLIP A. HUBBART, MAKING SENSE OF SEARCH AND SEIZURE LAW: A FOURTH AMENDMENT HANDBOOK 130 (2005).

any police activity that constitutes a search must be supported by a warrant.¹⁵

A Fourth Amendment seizure occurs when an individual's possessory interest in an item of property is significantly interfered with.¹⁶ Because the interference must be significant, not every interference with property automatically constitutes a seizure. For instance, courts have held that police secretly tracking a vehicle's movements by placing a tracking device on the exterior of the vehicle was not a significant enough interference to warrant a seizure.¹⁷ Even the taking of small amounts of paint from the exterior of a vehicle was held not to be a seizure as long as the scrapings were minor.¹⁸

B. Electronic Tracking Devices

1. In The Beginning: Beepers

A beeper is a small telecommunications device used to receive short one-way or two-way messages.¹⁹ Each message is accompanied by a short beep, thus the name.²⁰ Beepers were popular in the '80s and '90s, before cellular phones became common.²¹ Beeper signals travel through radio waves and are capable of covering an entire city or country.²² Today, they are mostly used in fields where immediate contact is required, such as medicine, emergency response, and IT.²³ Beepers have become increasingly obsolete, replaced by newer satellite-backed technology such as cellular phones and GPS devices.²⁴

2. Today: GPS Technology

GPS is a satellite-based navigation system used to pinpoint coordinates anywhere on Earth.²⁵ The network is composed of twenty-four satellites sent into orbit by the United States Department of Defense.²⁶ Originally developed for military use, GPS technology has been progressively available for consumer use and is now widely available in the United States.²⁷ For the price

14. Under the automobile exception to the warrant requirement, it is constitutionally acceptable for the police to search a car without a warrant as long as they have probable cause. *Chambers v. Maroney*, 399 U.S. 42, 48–49.

15. *Carroll v. United States*, 267 U.S. 132, 147 (1925).

16. *E.g.*, *United States v. Jacobsen*, 466 U.S. 109, 113 (1984).

17. *See generally* *United States v. Karo*, 468 U.S. 705, 721 (1984) (discussing Fourth Amendment concerns with the use of beepers as tracking devices).

18. *Cardwell v. Lewis*, 417 U.S. 583, 591 (1974).

19. What is a one-way pager?, WISEGEEK, <http://www.wisegeek.com/what-is-a-one-way-pager.htm> (last visited May 17, 2009).

20. *Id.*

21. *Id.*

22. *Id.*

23. *Id.*

24. *Id.*

25. *Id.*

26. *Id.*

27. Leonard David, *Satellite Navigation: GPS Grows Up, Market Lifts Off*, SPACE.COM, Nov. 5, 2003, http://www.space.com/business/technology/satcom_GPS_overview_031105.html.

of a GPS-enabled device²⁸, anyone can now access this technology at all times.

GPS devices use signals emitted by satellites.²⁹ The signals used by consumer GPS units are essentially radio waves.³⁰ By comparing the time the signal was emitted by the satellite to the time the signal is received, the device determines the distance of the satellite and calculates the user's coordinates and position.³¹ Certain units can also calculate the route to a particular destination, as well as the speed, distance to the destination, and more.³² Most units allow for storage of information, which users can retrieve at a later time.³³ GPS technology can be extremely precise, with location accuracy of fifteen meters on average.³⁴

Today, GPS units are available as a factory-installed option in many vehicles³⁵ or can be purchased online and in retail stores for an average cost of under 150 dollars.³⁶ Vehicle tracking devices using GPS technology are even available for consumer use.³⁷ While navigation capabilities are the main reason consumers buy these devices, they are also used for stolen vehicle recovery,³⁸ vehicle dispatch,³⁹ fleet management,⁴⁰ and more.⁴¹ Outside of the consumer realm, they are also used in military applications,⁴² as part of animal control to help scientists track migration patterns,⁴³ and more recently as law enforcement tools to track suspects' movements.⁴⁴

Police can conceal a GPS unit on the exterior or the undercarriage of a vehicle and track the movements of the vehicle without the driver knowing he or she is being tracked.⁴⁵ Depending on the type of device used, police can

28. See *infra* note 36 (pricing GPS devices around 150 dollars).

29. *What is GPS*, *supra* note 23.

30. *Id.*

31. *Id.*

32. *Id.*

33. *Id.*

34. *Id.*

35. Nina Kim, *GPS on the Go*, CARS.COM, Sept. 23, 2008, <http://www.cars.com/go/advice/Story.jsp?section=gdgt&subject=nav&story=navSystems> (last visited May 17, 2009).

36. The GPS Store.com, *Automotive GPS*, <http://www.theGPSstore.com/Automotive-GPS-C1.aspx> (last visited May 17, 2009).

37. The GPS Store.com, *GPS Buddy Connect Vehicle Tracking System*, <http://www.theGPSstore.com/GPS-Buddy-Connect-Vehicle-Tracking-System-P1955C228.aspx> (last visited May 17, 2009).

38. GPS Anti Theft Tracking and Theft Recovery, Rocky Mountain Tracking, Inc., <http://www.rmtracking.com/autotheft.html> (last visited May 17, 2009).

39. Vehiclepath.com, *GPS Fleet Tracking: The Difference "Dispatching" Makes*, <http://www.vehiclepath.com/wordpress/?p=92> (last visited May 17, 2009).

40. BrickhouseSecurity.com, *Fleet Tracking GPS - GPS Tracking Solutions*, <http://www.brickhousesecurity.com/avl-fleet-management-GPS.html> (last visited May 17, 2009).

41. Aero.org, *Uses for GPS*, <http://www.aero.org/education/primers/GPS/uses.html> (last visited May 17, 2009).

42. GPS, Harvey Mudd College <http://www.physics.hmc.edu/research/geo/GPS.html> (last visited May 17, 2009).

43. GPS, Science Buzz, http://www.smm.org/buzz/buzz_tags/GPS (last visited May 17, 2009).

44. Hubbard, *supra* note 2, at A1.

45. See generally *United States v. Garcia*, 474 F.3d 994, 998 (7th Cir. 2007) (holding that officers did not violate the Fourth Amendment by placing an electronic tracking device on the undercarriage of defendant's vehicle); *United States v. McIver*, 186 F.3d 1119, 1127 (9th Cir. 1999) (holding that no seizure occurred in placing an electronic device on defendant's vehicle because there was no meaningful interference with defendant's possessory interest).

follow the movements of the vehicle in real-time⁴⁶ or retrieve the unit at a later time and use the data in the unit's log to determine all the locations where the vehicle traveled.⁴⁷ Some units can even transmit the vehicle's location, speed, and direction information to a remote server as frequently as every sixty seconds.⁴⁸ Users can set up geographical borders and receive a text message or email when the vehicle has passed those borders.⁴⁹ The information is then transferred to a map, and reports can be stored as an Adobe PDF or in Microsoft Excel format for further analysis.⁵⁰

III. FROM BEEPERS TO GPS: THE EVOLUTION OF ELECTRONIC TRACKING

In many ways, beeper technology was in the 1980s what GPS technology is today. In the past, courts dealt with the use of beepers as tracking devices.⁵¹ While beepers are smaller and less sophisticated than GPS devices, their use as law enforcement tools is strikingly similar to the use of GPS devices. Both types of devices can be concealed on a suspect's vehicle and allow police to obtain information relating to the suspect's location and movements. To analyze electronic tracking through the use of beepers, courts focused on Fourth Amendment concerns, trying to determine whether or not a search occurred. In order to answer this question, courts focused, among other things on the method of attachment of the beeper, the monitoring of the beeper for tracking purposes, the expectation of privacy in public and private places, and the enhancement of police officers' senses.

A. Beepers: Manner of Attachment and Use As A Tracking Device

In analyzing Fourth Amendment issues concerning beepers, courts have considered (1) the manner of attachment of the beeper to the vehicle and, (2) the monitoring of the beeper as a tracking device.⁵²

In terms of the attachment of the beeper to the vehicle, courts have generally allowed police to place the beeper on the vehicle as long as the police were lawfully near the vehicle when doing so.⁵³ Officers could attach beepers to the exterior of a vehicle as "the trespass involved in affixing the beepers to the underbody of the vehicles was, standing alone, so minimal as to

46. See *Police Cozy Up to StarChase: Cannon-Fired GPS Tracking Devices that Stick to Your Car*, GPS MAGAZINE, Oct. 1, 2007, http://www.GPSmagazine.com/2007/10/police_cozy_up_to_starchase_ca.php (discussing police use of real time GPS tracking during hot pursuits).

47. See Amazon.com, GPS Data Logger, <http://www.amazon.com/DG-100-GlobalSat-Logger-Google-Integration/dp/B0000LAEHO> (last visited May 17, 2009) (selling device that allows location data, from the GPS, to be downloaded to a computer).

48. GPS Buddy Connect Vehicle Tracking System, *supra* note 35.

49. *Id.*

50. *Id.*

51. See generally *United States v. Karo*, 468 U.S. 705 (1984) (analyzing Fourth Amendment concerns with the use of beepers as tracking devices and holding that no constitutional interest was violated by police officers' use of a beeper to track suspect); *United States v. Knotts*, 460 U.S. 276 (1983) (holding that placing a beeper in a drum of chloroform and monitoring the signals did not violate the Fourth Amendment).

52. 1 WAYNE LAFAVE, SEARCH AND SEIZURE: A TREATISE ON THE FOURTH AMENDMENT § 2.7 (4th ed. 2008).

53. *Id.*

be of little consequence.”⁵⁴ On the other hand, attaching the beeper to the inside of a vehicle was considered a search.⁵⁵ Courts that believed attaching a beeper did not constitute a search responded that citizens do not agree to “the risk that the government will plant a bug in [their] car in order to track [their] movements, merely because [they] drive[] [their] car in areas accessible to the public.”⁵⁶ Depending on the nature of the attached object, the attachment could potentially become a search under the Fourth Amendment.⁵⁷ In the case of beepers, some courts have held that “the act of attachment is a search, given the nature of the thing attached.”⁵⁸ The Supreme Court resolved this difference by holding that attaching a beeper was not a search because “it conveyed no information at all” and thus “infringed no privacy interest” nor was it a seizure because it “did not interfere with anyone’s possessory interest in a meaningful way.”⁵⁹

In discussing the use of a beeper as a tracking device, courts focused on whether the monitoring activity violated the privacy protections of the Fourth Amendment.⁶⁰ The Seventh Circuit noted that “the mere tracking of a vehicle on public streets by means of a similar though less sophisticated device (a beeper) is not a search,”⁶¹ but it did not address the question of whether the installation of the tracking device on the vehicle turned into a search.⁶²

The Supreme Court, in *United States v. Knotts*, reiterated the notion that monitoring beeper signals does not invade any legitimate expectation of privacy.⁶³ The court additionally referred to the traditional contrast in privacy concerns between a home and an automobile.⁶⁴ The court noted that an automobile is afforded lower privacy protection because its “function is transportation and it seldom serves as one’s residence or as the repository of personal effects”⁶⁵ and its “occupants and its contents are in plain view.”⁶⁶

In order to determine whether the use of GPS violates the Fourth Amendment, courts have recycled some of the same arguments used in the beeper cases.⁶⁷ Among other arguments, courts have weighed whether the installation of a tracking device violated an individual’s expectation of privacy and whether the use of this device would be an enhancement or a substitute for a police officer’s senses.

54. *Id.*

55. *Id.*

56. *Id.*

57. See *United States v. Holmes*, 521 F.2d 859, 864 (5th Cir. 1975) (“We hold that the installation of an electronic tracking device on a motor vehicle is a search within the meaning of the Fourth Amendment.”).

58. LAFAVE, *supra* note 52.

59. *United States v. Karo*, 468 U.S. 705, 706 (1984).

60. LAFAVE, *supra* note 52.

61. *United States v. Garcia*, 474 F.3d 994, 996 (7th Cir. 2007).

62. *Id.* at 996–97.

63. *United States v. Knotts*, 460 U.S. 276, 285 (1983).

64. *Id.* at 282.

65. *Id.* at 281 (citations omitted).

66. *Id.*

67. See *infra* Part III.B-D (discussing the ways that the courts have applied the reasoning from cases involving beepers to GPS cases).

B. Expectation of Privacy

In analyzing the issue of electronic tracking, courts have distinguished between the lower expectations of privacy in public places and heightened expectations of privacy in private areas.⁶⁸ Individuals generally have no expectation of privacy with regard to what they expose to the public.⁶⁹ Individuals have a diminished expectation of privacy outside the home and this expectation sinks to an even lower level in the case of automobiles. For example, “[a] person traveling in an automobile on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another.”⁷⁰

For instance, if a police officer installs a tracking device while the vehicle is parked in a private space, there would be a potential violation of an individual’s expectation of privacy.⁷¹ But, theoretically police could place a tracking device while the vehicle was on a public street without a warrant.⁷²

Unlike beepers, GPS devices can provide a “record of every place the vehicle had traveled in the past” in sharp contrast to what an officer can physically do.⁷³ A GPS device could reveal details about a person’s private life by providing information on “travel to doctors’ offices, banks, . . . family planning clinic[s], [and] labor rall[ies].”⁷⁴ That same court also stated that individuals “have a right to be free from the type of governmental intrusion that occurs when a GPS device is attached to a citizen’s vehicle, regardless of reduced privacy expectations due to advances in technology.”⁷⁵ The court in *State v. Jackson* clearly emphasized that “the right to privacy . . . is not defined by technological advances.”⁷⁶ The court was concerned that without a warrant requirement, law enforcement authorities would be able to use such devices on any individual’s vehicle, whether or not that person was suspected of criminal wrongdoing.⁷⁷ According to the court, the use of GPS tracking devices was a “particularly intrusive method of surveillance, making it possible to acquire an enormous amount of personal information about the citizen”⁷⁸

However, in *United States v. McIver*, the court allowed the warrantless

68. See *Katz v. United States*, 389 U.S. 347, 351 (1967) (holding that a telephone booth conversation was sufficiently private enough to be afforded Fourth Amendment protection).

69. See generally *id.* (“What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection.”).

70. *Knotts*, 460 U.S. at 281–82 (stating that when the defendant “traveled(sic) over the public streets he voluntarily conveyed to anyone who wanted to look the fact that he was traveling over particular roads in a particular direction, the fact of whatever stops he made, and the fact of his final destination when he exited from public roads onto private property.”).

71. *United States v. Jones*, 451 F. Supp. 2d 71, 88 (D.C. Cir. 2006).

72. *Id.*

73. *State v. Jackson*, 76 P.3d 217, 223 n. 2 (Wash. 2003).

74. *Id.* at 223.

75. *Id.* at 224.

76. *Id.* at 223.

77. See *id.* at 231 (“Requiring a warrant ensures that use of GPS technology will be limited to circumstances in which law enforcement has probable cause to believe that criminal activity had occurred or is occurring and will protect innocent citizens from unwarranted and highly intrusive police surveillance.”).

78. *Id.* at 224.

placing of a tracking device on a Toyota 4Runner, even though it was parked in the owner's driveway, because the vehicle was outside the curtilage and thus not within Fourth Amendment protection.⁷⁹ Furthermore, the court in *New York v. Class* held that placing the tracking device on the vehicle was not a search.⁸⁰ The court held that there is no reasonable expectation of privacy since "[t]he exterior of a car, of course, is thrust into the public eye, and thus to examine it does not constitute a 'search.'"⁸¹

In *United States v. Jones*, the defendant challenged the warrantless placement of a GPS device on his vehicle.⁸² The court reasoned that a person traveling on a public way has no reasonable expectation of privacy.⁸³ Accordingly, the court held that any data obtained through the use of the GPS device while the vehicle was parked on private property was inadmissible, whereas data obtained when the vehicle was in a public area was admissible without a warrant.⁸⁴

In New York, *People v. Gant* overturned a previous state case that required police to obtain a warrant prior to installing a GPS device to track a vehicle.⁸⁵ In *Gant*, the court relied on that notion that if there is "no expectation of privacy, there is no search and seizure within the purview of the Fourth Amendment."⁸⁶ In *Gant*, the court reasoned that because defendant could not prove that he was the owner of the vehicle nor that he was a passenger with some "reasonable expectation of privacy in the vehicle itself," he had failed to "establish a legitimate expectation of privacy" in the vehicle.⁸⁷ In 2008, a New York appellate court reaffirmed that the warrantless use of GPS devices depends on the "reasonable expectation of privacy in the place or object of the search."⁸⁸ The court focused on the vehicle being on a public roadway and concluded that "conduct and activity which is readily open to public view is not protected."⁸⁹ Thus the New York court held that "[a]bsent a showing of a legitimate expectation of privacy, a warrant need not be obtained."⁹⁰

C. Enhancement of the Senses

In determining whether the use of electronic tracking devices affects

79. *United States v. McIver*, 186 F.3d 1119, 1126 (9th Cir. 1999).

80. *See id.* at 1126–27 (holding that officers did not violate the Fourth Amendment by placing an electronic tracking device on the undercarriage of defendant's vehicle).

81. *New York v. Class*, 475 U.S. 106, 114 (1986).

82. *United States v. Jones*, 451 F. Supp. 2d 71, 87–88 (D.C. Cir. 2006).

83. *Id.* at 88 (citing *United States v. Karo*, 468 U.S. 705, 715 (1984); *United States v. Knotts* 460 U.S. 276, 281–282 (1982)).

84. *Id.*

85. *See People v. Gant*, 802 N.Y.S.2d 839, 847 (N.Y. County Ct. 2005) ("Defendant has not established that he has a legitimate expectation of privacy in a vehicle traveling upon a public roadway such that law enforcement was required to obtain a search warrant prior to its installation of a GPS device to track the vehicle's whereabouts.").

86. *Id.* at 845.

87. *Id.*

88. *People v. Weaver*, 860 N.Y.S.2d 223, 225 (N.Y. App. Div. 2008).

89. *Id.* at 226 (quoting *People v. Reynolds*, 523 N.E.2d 291, 293 (N.Y. 1988)).

90. *Id.* at 226.

Fourth Amendment rights, courts have relied upon the notion that some technological advances merely augment the senses of law enforcement officers. Thus, no Fourth Amendment violation occurs when the observation is made by officers who are otherwise lawfully on location. As a result, aerial surveillance is held to be acceptable under the Fourth Amendment.⁹¹ The courts explain that a person has no expectation of privacy in the air above his property, and that the property is open to public view from aircraft.⁹² Therefore, if a person erects a high fence, while the police could not go over the fence, they may use a helicopter to view over it.⁹³

In *State v. Jackson*, the Washington appeals court found that the use of GPS devices was equivalent to enhancing a police officer's natural senses.⁹⁴ The court stated that the use of GPS was the same as police officers physically following the defendant.⁹⁵ The Supreme Court of Washington reversed and held that a warrant was, in fact, required.⁹⁶ The court reasoned that while binoculars are a technological means to increase visual accuracy, GPS devices do "not merely augment the officer's senses, but rather provide[] a technological substitute for traditional visual tracking."⁹⁷ The Washington Supreme Court continued to explain that, unlike physical surveillance by an officer, a GPS device could be active for uninterrupted twenty-four hour surveillance for more than two weeks.⁹⁸ Furthermore, a GPS device could provide a "record of every place the vehicle had traveled in the *past*" in sharp contrast to what an officer can physically do.⁹⁹

The argument that GPS devices are equivalent to a police officer physically following the suspect ignores the fact that GPS devices accumulate data on a much larger scale than a person. GPS devices run continually from the time they are switched on to the time they are switched off. Police officers would be hard pressed to maintain uninterrupted surveillance for weeks at a time without being noticed. Additionally, depending on the type of GPS device used, police may also be able to collect dates and store the information much more efficiently than an officer could, "far beyond any ordinary powers of observation about which citizens are put on notice."¹⁰⁰

91. See, e.g., *California v. Ciraolo*, 476 U.S. 207, 215 (1986) (holding that a naked-eye aerial observation of a backyard did not violate the Fourth Amendment).

92. See, e.g., *Florida v. Riley*, 488 U.S. 445, 451–52 (1989) (holding that officers' use of a helicopter to observe the defendant's property did not violate the Fourth Amendment). The Court reasoned that the defendant "could not reasonably have expected that his greenhouse was protected from public or official observation from a helicopter had it been flying within the navigable airspace for [a] fixed-wing aircraft." *Id.* at 450–51.

93. See *id.*

94. *State v. Jackson*, 76 P.3d 217, 223 (Wash. 2003).

95. *Id.*

96. See *id.* at 231 ("Absent a recognized exception to the warrant requirement, attachment of a GPS device to a vehicle without a warrant violates these privacy interests. Requiring a warrant ensures that use of GPS technology will be limited to circumstances in which law enforcement has probable cause to believe that criminal activity had occurred or is occurring and will protect innocent citizens from unwarranted and highly intrusive police surveillance.")

97. *Id.* at 223.

98. *Id.*

99. *Id.* at 223 n.2.

100. *United States v. Bobisink*, 415 F. Supp. 1334, 1339 (D. Mass. 1976).

Similarly, beepers are used because the information they provide is “not otherwise available to the government”¹⁰¹ or else “there [would be] no need for the device in the first place.”¹⁰² Some courts argue that beepers are “more . . . than magnification of the observer’s senses” because they transform “the vehicle, unknown to its owner, into a messenger in the service of those watching it.”¹⁰³ The Seventh Circuit declined to apply that analysis of beepers to GPS technology, finding that while GPS is a new technology, it is similar to police using cameras or satellite imaging to follow a vehicle on a public street and is “unequivocally *not* a search within the meaning of the amendment.”¹⁰⁴

Because GPS units do not require constant monitoring as beepers do, it is difficult to argue that they are merely sense augmenting technologies.¹⁰⁵ Unlike beepers, which require that the “police stay in contact with the vehicle that they are actively ‘tailing,’”¹⁰⁶ and thus might “merely assist the police in keeping the vehicle in view,”¹⁰⁷ a GPS unit is a substitute for the senses.¹⁰⁸ The police do not have to be in pursuit of the vehicle or follow the GPS signal in real time.¹⁰⁹ They can retrieve the unit at a later time and go through its log to determine where the vehicle has been.¹¹⁰ As such the use of GPS by police poses a greater threat to privacy and should get heightened Fourth Amendment protection.¹¹¹

D. Other Approaches to the Issue: Exigent Circumstances

In *United States v. Karo*, the Supreme Court approached the issue of beepers as one of exigent circumstances.¹¹² The Court rejected the government’s argument that obtaining a warrant was impracticable because it may not be possible to predict whether the suspect would remain in a public place or proceed into a private area, thus turning the activity into a search.¹¹³ The Court stated that, while exigent circumstances may make it impracticable to obtain a warrant prior to the installation of the beeper, it would “still be possible to describe the object into which the beeper is to be placed, the circumstances that led agents to wish to install the beeper, and the length of

101. *United States v. Holmes*, 521 F.2d 859, 866 n.13 (5th Cir. 1975).

102. *Id.*

103. *United States v. Moore*, 562 F.2d 106, 112 (1st Cir. 1977).

104. *United States v. Garcia*, 474 F.3d 994, 997 (7th Cir. 2007).

105. Renee McDonald Hutchins, *Tied Up in Knotts? GPS Technology and the Fourth Amendment*, 55 UCLA L. REV. 409, 440–49 (2007).

106. *United States v. Berry*, 300 F. Supp. 2d 366, 368 (D. Md. 2004).

107. *Id.*

108. *Id.*

109. *Id.*

110. *Id.*

111. Hutchins, *supra* note 99, at 456–67.

112. *See generally* *United States v. Karo*, 468 U.S. 705, 714–15, 718 (1984) (holding that “[s]earches and seizures inside a home without a warrant are presumptively unreasonable absent exigent circumstances” but that “if truly exigent circumstances exist no warrant is required under general Fourth Amendment principles.”).

113. *Id.* at 718.

time for which beeper surveillance is requested.”¹¹⁴

Interestingly, even the Department of Justice’s Electronic Surveillance Manual agrees and recommends securing a warrant because “it often cannot be determined in advance whether a package containing a beeper will be taken inside a place where a person has a valid expectation of privacy, a search warrant should be obtained to cover that eventuality.”¹¹⁵

Requiring a warrant before tracking a suspect would better serve the Fourth Amendment’s purpose. True exigencies might arise “[f]or example, during a bank robbery, [when] a bank teller acting as an agent for the police might slip a beeper into a money bag, thereby enabling the police to track the culprits.”¹¹⁶ Even in such instances, “the beeper would have to be attached at the scene of the crime or immediately thereafter, at a time when it would be impossible for police to obtain a warrant.”¹¹⁷ Even in those cases, the safest policy would be for police “to apply for a warrant as soon as possible after the tracking begins” in order to comply with the Fourth Amendment.¹¹⁸

State v. Campbell applied the concept of exigency announced in *United States v. Karo*.¹¹⁹ While *Campbell* reemphasized that in some cases, securing a warrant “would be impracticable because of the ‘exigencies’ surrounding their use and because of the need to satisfy the particularity requirements of the Fourth Amendment,”¹²⁰ the court nonetheless reasoned that because no exigency was present in this case, a warrant was required.¹²¹

Because a GPS device is attached to the vehicle, it has the potential to intrude upon the privacy of anyone who drives the vehicle or is a passenger in the vehicle. For instance, police could not only track the suspect but could also monitor a suspect’s innocent friend or relative who uses the suspect’s vehicle with the GPS attached to it. Unless the police are able to turn off the device or retrieve it when the vehicle is driven by someone else, the privacy rights of third parties may well be implicated.

Jurisdictions that allow for warrantless use of GPS devices, based on a lower expectation of privacy in public places, face a thorny question when the vehicle is driven onto private property and the police would not be able to continue visual surveillance. For example, police would be able to justify the warrantless placing of a GPS device on a vehicle while it is parked on a public street and track it while it is driven on public property, but they would have to stop gathering information as soon as the vehicle veered off into a walled property outside of plain view.

114. *Id.* The Court further added that “[r]equiring a warrant will have the salutary effect of ensuring that use of beepers is not abused, by imposing upon agents the requirement that they demonstrate in advance their justification for the desired search.” *Id.* at 717.

115. U.S. DEP’T OF JUSTICE, ELECTRONIC SURVEILLANCE MANUAL 48 (2005), available at <http://www.usdoj.gov/criminal/foia/docs/elec-sur-manual.pdf>.

116. LAFAVE, *supra* note 52, § 2.7(e), at 773.

117. *Id.*

118. *Id.* at 773.

119. *United States v. Campbell*, 759 P.2d 1040, 1042–44 (Or. 1988).

120. *Id.* at 1049 n. 9.

121. *Id.* at 1042 (“Because no exigency obviated the need to obtain a warrant, use of the transmitter violated defendant’s rights . . .”).

In *United States v. Garcia*, police received information relating to drug fabrication and attached a GPS device to the suspect's vehicle without a warrant.¹²² The GPS device led police to a large tract of land where a methamphetamine laboratory was discovered.¹²³ While police were on the land, the suspect arrived in a vehicle.¹²⁴ Police searched the vehicle and discovered further evidence.¹²⁵ The Seventh Circuit upheld the warrantless tracking of the vehicle through the GPS device.¹²⁶

While Judge Posner in *Garcia* is correct that the GPS device "did not affect the vehicle's driving qualities, did not draw power from the vehicle's engine or battery, did not take up room that might otherwise have been occupied by passengers or packages, [and] did not even alter the vehicle's appearance,"¹²⁷ it seems a stretch to say that police "did not 'seize' the vehicle in any intelligible sense of the word."¹²⁸

IV. NEW WAYS TO ASSESS THE ISSUE

Traditional arguments, such as those concerning expectations of privacy in public versus private places and the use of the tracking device as a substitute for or augmentation of natural senses are obsolete. Traditional factors, such as loss of dominion and control, loss of space, and alteration of the vehicle, fail to recognize that the use of GPS devices today presents a far more complex challenge than beepers did in the past. "[T]he intensity of the surveillance,"¹²⁹ and the "State's ability to synthesize the information collected"¹³⁰ are far better standards to use in evaluating the intrusiveness of the device under Fourth Amendment standards. Creating guidelines for the type of information collected and how long surveillance is authorized would better ensure that individuals' privacy rights are protected under the Fourth Amendment.

At a minimum, the reasonable suspicion standard of *Terry v. Ohio* provides the appropriate level of caution.¹³¹ Viewed from the perspective that beepers and GPS devices do not significantly affect an individual's possessory interest in the vehicle, and in light of the lower expectation of privacy afforded to vehicles, a reasonable suspicion standard might seem appropriate.¹³²

Judge Posner recognized that "the meaning of a Fourth Amendment search must change to keep pace with the march of science."¹³³ The Fourth Amendment cannot "sensibly be read to mean that police shall be no more

122. *United States v. Garcia*, 474 F.3d 994, 995 (7th Cir. 2007).

123. *Id.*

124. *Id.* at 996.

125. *Id.*

126. *Id.* at 998.

127. *Id.* at 996.

128. *Id.*

129. Recent Case, *Constitutional Law – Fourth Amendment - Seventh Circuit Holds That GPS Tracking Is Not A Search*, 120 HARV. L. REV. 2230, 2235 (2007).

130. *Id.*

131. LAFAVE, *supra* note 52, § 2.7(e)-(f).

132. *Id.*

133. *United States v. Garcia*, 474 F.3d 994, 997 (7th Cir. 2007).

efficient in the twenty-first century than they were in the eighteenth.”¹³⁴ Nonetheless, in light of the potentially indiscriminate amount of information that GPS devices can convey, a more thorough justification under a probable cause standard might be required.¹³⁵

Technological advances are making electronic devices such as GPS units smaller, cheaper, and more efficient to use. Law enforcement increasingly relies on GPS technology as a crime-fighting tool, though police departments around the county are reluctant to admit it.¹³⁶ In Fairfax, Virginia alone, police used GPS devices sixty-one times in 2005, fifty-two times in 2006, and forty-six times in 2007.¹³⁷ Police in Arlington, Virginia have used the device seventy times in the last three years.¹³⁸ The issue becomes “whether the more sophisticated tools are doing the same things [the police] used to do or are creating a different set of legal circumstances.”¹³⁹

GPS technology is becoming more widespread and its applications are increasing. GPS units are now a factory-installed option offered in many brands of vehicles and are also available as personal hand-held units. Many newer cellular phones even include GPS capability.¹⁴⁰ This new technology allows for cellular phones to potentially be used as portable GPS units, which can be easily transported from public places into private areas where police would need a warrant to follow. While cellular phone conversations,¹⁴¹ and more recently cellular phone tracking,¹⁴² are so far subject to higher protection, using a cellular phone as a GPS could potentially create a loophole for law enforcement to conduct the type of “mass surveillance” Judge Posner noted in *Garcia*.¹⁴³

The Supreme Court has already warned that the problem posed by beepers could be dealt with at a later time by noting 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.”¹⁴⁴ We are now at the time when such widespread use of technological means is possible. Courts should analyze Fourth Amendment concerns with GPS technology as a novel issue of law.

134. *Id.* at 998.

135. LAFAVE, *supra* note 52, § 2.7 (citing *United States v. Moore*, 562 F.2d 106 (1st Cir. 1977)).

136. Hubbard, *supra* note 2, at A1.

137. *Id.*

138. *Id.*

139. *Id.* (quoting Craig Fraser, director of management services for the Police Executive Research Forum).

140. Barzan “Tony” Antal, *Upcoming Trend: GPS-Enabled Cell Phones*, DEVHARDWARE, Jun. 17, 2008, <http://www.devhardware.com/c/a/Opinions/Upcoming-Trend-GPSEnabled-Cell-Phones/>.

141. *See generally* 18 U.S.C. §§ 2510–2522 (2000) (requiring the government to get court approval before instituting electronic surveillance).

142. Cell Tracking, Electronic Frontier Foundation, <http://www.eff.org/issues/cell-tracking> (last visited Apr. 1, 2009).

143. *United States v. Garcia*, 474 F.3d 994, 998 (7th Cir. 2007).

144. *United States v. Knotts*, 460 U.S. 276, 284 (1983).

V. CONCLUSION

The Fourth Amendment has weathered many technological storms, including vehicles, thermal imaging devices,¹⁴⁵ binoculars,¹⁴⁶ beepers,¹⁴⁷ and now GPS devices.¹⁴⁸ Courts have struggled to keep to the spirit of the Fourth Amendment, but technology is posing a challenge increasingly beyond what the framers envisioned. Nonetheless, the Fourth Amendment remains relevant by continually adapting to new technologies. The effects of technological advances on the Fourth Amendment would be better evaluated by rethinking the criteria used in assessing the intrusiveness of the device. For instance, as GPS devices continue to provide more information than live surveillance, the question ceases to be one of enhancement of the senses. The electronic tracking technology used today poses a challenge that is stretching the limits of the Fourth Amendment's protection. Until courts have had the opportunity to examine the issue in detail, strict compliance with the warrant requirement would provide better protection under the Fourth Amendment.

145. See *United States v. Kyllo*, 533 U.S. 27, 34 (2001) (holding that the use of thermal imaging devices constituted an unreasonable search).

146. See *United States v. Whaley*, 779 F. 2d 585, 592 (11th Cir.1985) (finding that use of binoculars did not constitute an unreasonable search because the same activities could be seen with the naked eye).

147. See *supra* Part III.A (discussing Fourth Amendment implications of using beepers).

148. See *supra* Part III.B-D (discussing how courts have applied the reasoning from "beeper cases" to those involving GPS devices).