

Summer 2005

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Recommended Citation

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 (2004-2005)

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COMMENTS

IT'S ALREADY PUBLIC: WHY FEDERAL OFFICERS SHOULD NOT NEED WARRANTS TO USE GPS VEHICLE TRACKING DEVICES

JOHN S. GANZ*

I. INTRODUCTION

A technology previously associated with military “smart bombs” now offers police proven, substantial value in investigating the movements of criminal suspects. Global Positioning System (GPS)-based surveillance systems enable police to cheaply and easily gather intelligence and evidence they would otherwise have to obtain through more costly, cumbersome and risky means such as physical “tails” by pursuing officers.¹ The efficiency gains GPS tracking provides are especially significant because they enable police to extend their operational capability with minimal incremental spending.²

In a recent case in Washington State, police used GPS trackers attached to a murder suspect’s car and truck to quickly locate the remote wilderness grave in which the suspect had buried the body of his nine-year-old victim.³ The information proved critical to prosecutors in obtaining a conviction.⁴

While the use of GPS tracking devices grows among law enforcement, federal law remains largely undefined regarding the need to obtain warrants

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¹ See discussion *infra* Parts II.B, IV.B.2.

² See discussion *infra* Part IV.B.2.

³ State v. Jackson, 46 P.3d 257, 260 (Wash. Ct. App. 2002); see discussion *infra* Part III.F.2.b.

⁴ See discussion *infra* Part IV.B.2.

before their deployment. State law presents a similarly mixed picture: while California and Nevada courts ruled that no warrants are required before using GPS devices,⁵ the Washington Supreme Court⁶ and a county court in New York⁷ recently ruled that police must obtain warrants before conducting GPS-based surveillance. These rulings followed a 1988 Oregon State Supreme Court ruling requiring state police officers to obtain warrants before using “beeper” transmitters, the technological precursors to GPS.⁸

The federal-state split is a function of differing constitutional conceptions of personal privacy.⁹ Federal courts have not required police to get warrants to use electronic tracking devices because the information gathered through them—such as the movement of a car or airplane through public thoroughfares—is already publicly available. Put another way, federal law recognizes no legitimate expectation of privacy with respect to movement in public.¹⁰ This notion is especially true for cars, which federal courts grant even less protection with respect to search and seizure.¹¹

More recently, some state courts and groups such as the American Civil Liberties Union (ACLU) cited the level and precision of information GPS trackers collect relative to beepers in arguing that their use should be subject to a warrant requirement.¹² These groups conceive of GPS as a substitute police officer who gathers and stores precise, detailed data which goes well beyond that available through less sophisticated tracking devices.¹³ As such, these parties consider GPS substantially more intrusive than beepers and therefore worthy of heightened procedural restraints.

These arguments have succeeded at the state level because state law privacy protections often exceed those provided under federal law.¹⁴ While federal law merely prohibits unreasonable searches and seizures in limited situations, several state constitutions, like those of Oregon and Washington, adopt a broader conception of privacy which includes protection against government *scrutiny*.¹⁵ Absent warrants, state and local law enforcement agencies operating under these more far-reaching constitutions can neither

⁵ *People v. Zichwic*, 114 Cal. Rptr. 2d 733, 742-43 (Cal. Ct. App. 2002); *Osburn v. State*, 44 P.3d 523, 526 (Nev. 2002); see discussion *infra* Part III.F.1.

⁶ See discussion *infra* Part III.F.2.b.

⁷ See discussion *infra* Part III.F.2.c.

⁸ See discussion *infra* Part III.F.2.a.

⁹ See discussion *infra* Parts III.A.1, III.F.

¹⁰ See discussion *infra* Part III.A.1.

¹¹ See discussion *infra* Part III.A.3.

¹² See discussion *infra* Parts III.F.2.b, III.F.2.c.

¹³ See discussion *infra* Part III.F.2.b.

¹⁴ See discussion *infra* Parts III.F.2.a, III.F.2.b.

¹⁵ See discussion *infra* Parts III.F.2.a, III.F.2.b.

invade a protected space nor engage in systematic forms of scrutiny, such as deployment of GPS trackers.¹⁶

This Comment provides a legal argument¹⁷ that GPS-based tracking of vehicles in public areas does not implicate the Fourth Amendment and therefore should not be subject to warrant requirements—provided such tracking does not pierce the exterior of a vehicle or enable police to track movement inside a legitimately private space. To the extent a state constitution is consistent with federal law, that state should follow this approach. Fundamentally, the information that law enforcement obtains through GPS tracking is already available, either without technological assistance or with less sophisticated tracking technology. As such, it is legally insignificant in terms of current Fourth Amendment jurisprudence.

This clarification is critical because GPS technology offers substantial promise in improving the quality of evidence available to law enforcement.¹⁸ The fact that GPS provides a new form of technical evidence—similar to video surveillance or audiotape of conversations—argues in favor of encouraging its use because judges and juries could, at least theoretically, rely more comfortably upon it than they would less reliable information, such as witness testimony. Moreover, by overlaying GPS tracks with other electronic intelligence such as recorded phone conversations, police develop a richer, more accurate understanding of their targets, one which can aid juries in deciding a case.¹⁹

From a policy perspective, the practical limits of resources available to law enforcement in the post-9/11 era argue in favor of GPS usage because the technology greatly enhances law enforcement efficiency.²⁰ And while critics argue GPS represents a danger to individual liberty, the technology can just as easily be used to attack public corruption: officials in New Jersey, for instance, used GPS tracking to prosecute police officers charged with falsifying records and other forms of misconduct.²¹

Part II explains the technological basics of tracking technology and possible law enforcement uses of GPS.

Part III first examines the federal constitutional law of search and seizure relevant to the installation and monitoring of electronic tracking devices. It then examines recent developments in state law.

¹⁶ See discussion *infra* Parts III.F.2.a, III.F.2.b.

¹⁷ See discussion *infra* Part IV.B.1.

¹⁸ See discussion *infra* Part IV.B.2.

¹⁹ See discussion *infra* Part IV.B.2.

²⁰ See discussion *infra* Parts II.B, IV.B.2.

²¹ See discussion *infra* Part II.B.

Part IV argues the case for continued, warrantless use of GPS-based devices to track suspect vehicles traveling in public, at least on the federal level. Additionally, this Part argues that the same principles should apply on the state level when state constitutions provide limited privacy protections similar to those in the United States Constitution.

II. BACKGROUND

A. TECHNOLOGIES IN QUESTION, CAPABILITIES AND LIMITS

Two major tracking technologies are available to police: beepers, or “bird dogs,” and GPS trackers.

1. *Beepers*

“A beeper is a radio transmitter, usually battery operated, which emits periodic signals that can be picked up by a radio receiver.”²² Once the beeper is placed on the target item, a police officer uses a receiver to track the location of the beeper by determining its position relative to his. Officers then maneuver into a position where the target item can be followed and/or sighted.

Beepers are passive—they neither collect nor store data. Rather, they simply emit electronic pulses which can be picked up and followed. Their value thus depends on the ability of monitoring officers to physically maneuver and locate the object in question. In contrast, GPS devices independently acquire and store data which is substantial and precise.

2. *GPS*

GPS is a network of at least twenty-four satellites which continuously send radio signals transmitting their locations; receivers on earth triangulate their own three-dimensional position using information from at least four of the satellites.²³ The position “fix” a receiver creates consists of current longitude, latitude, and time.²⁴

Fixes, when recorded, become a track, or chronological record, of travel.²⁵ A typical track is accurate up to fifteen feet and two miles per hour

²² United States v. Knotts, 460 U.S. 276, 277 (1983).

²³ Aaron Renenger, *Satellite Tracking and the Right to Privacy*, 53 HASTINGS L.J. 549, 550 (2002).

²⁴ David A. Schumann, *Tracking Evidence with GPS Technology*, WIS. LAW., May 2004, at 10.

²⁵ *Id.*

of speed, but tracks can be adjusted to record position more frequently, giving a more detailed representation of the target's path.²⁶

The memory in many GPS units is designed to hold only a fraction of the information that the GPS [device] actually possesses. Accordingly, a user must download GPS track . . . information, either by physical connection to a computer or with a GPS transceiver, a radio, or a cell phone connection. Even inexpensive commercially available software and a small personal computer can extract speed, exact position, distance traveled, and travel times, and can overlay the traveled track on maps or aerial photographs . . . available on the Internet.²⁷

Most GPS tracking devices are “about the size of a paperback book and can be affixed to a car’s undercarriage with a magnet. Manufacturers say . . . [their] cost—about \$1,000—is headed down as the market” for the devices expands.²⁸ Police agencies say these systems pay off because “it costs more to keep a team of officers on a suspect’s trail than [it does] to download information from a computer.”²⁹

One model, which a *Law Enforcement Technology Magazine* reviewer called a “vehicle tracking system that would make James Bond envious,” sells for \$2,396 per unit.³⁰ Users pay \$59 per month of tracking data used.³¹ The product can be attached to a car in thirty seconds and operates anywhere in the United States, Canada, and Mexico where cell towers exist.³²

GPS tracking is precise but not foolproof. In the Scott Peterson murder case, for instance, trackers attached to motor vehicles Peterson used at times showed him traveling at 38,000 miles per hour³³ and at 489 miles per hour.³⁴ In addition, a device placed in Peterson’s deceased wife’s car,

²⁶ *Id.* at 10-11.

²⁷ *Id.*

²⁸ Richard Willing, *Surveillance Gets a Satellite Assist: Police, Courts Still Sorting Out Legality of Using GPS to Track Suspects*, USA TODAY, June 10, 2004, at A3.

²⁹ Brendan Lyons, *GPS Does the Legwork as Cops Track Suspects*, TIMES UNION, Oct. 5, 2004, at A1.

³⁰ John Bella, *GPS Web Device*, LAW ENFORCEMENT TECH. MAG., Oct. 2002, at 170, available at <http://www.spycompany.com/let/let%20pg%20170.htm>.

³¹ See Covert GPS Vehicle Tracking Systems LLC, <http://www.covert-gps-vehicle-tracking-systems.com> (last visited Oct. 10, 2005).

³² *Id.*

³³ Garth Stapley, *Expert: GPS Device Malfunctioned, But Data Good*, MODESTO BEE, Sept. 13, 2004, available at <http://www.modbee.com/reports/peterson/trialupdates/story/9136715p-10036582c.html>.

³⁴ Jim McKay, *Nowhere to Hide: Location Tracking Technology Arrives on the Law Enforcement Scene*, GOV'T TECH., June 2004, at 7, available at <http://www.govtech.net/magazine/story.print.php?id=90490>.

which he drove, did not work for a three-week period.³⁵ Carports, tunnels, and parking structures can block a tracker's GPS signal.³⁶ Finally, after downloading to a computer, GPS tracks "are no different from any other data file—they can be manipulated (like a sound recording), corrupted, or accidentally erased."³⁷

B. USE OF GPS IN CRIMINAL INVESTIGATIONS

Law enforcement agencies use GPS in a variety of situations, including:

MURDER INVESTIGATIONS: In the Scott Peterson case, mentioned above, GPS tracks showed suspect Peterson made at least five visits in January 2003 to the Berkeley, California marina near the place where his victims washed up.³⁸ Peterson's visits suggested "a pattern of a criminal returning to a crime scene."³⁹

In Washington State, a GPS track from a device placed on a murder suspect's vehicles showed him stopping at two sites.⁴⁰ Police found incriminating evidence at the first site and a grave containing the victim's body at the second.⁴¹ In another Washington case, a dog kept bringing home human bones.⁴² Sheriff's deputies fitted the dog with a GPS device and followed him back to the body.⁴³

DRUG INVESTIGATIONS: In one case, police placed a GPS tracker on a drug suspect's vehicle and used it to track the suspect to and from a marijuana field.⁴⁴

Moreover,

[l]aw enforcement may use GPS movement 'profiling' to follow a conspiracy without the conspirators' knowledge . . . [A]n entire drug ring might be detected if officers attach a GPS [tracker] to an informant's car and make a controlled buy. Officers could then watch the drug house and . . . attach GPS units to other vehicles stopping there, then raid the drug house. Shortly thereafter, officers could recover the GPS units and see what possible new drug houses the patrons of the first house are using. The process unfolds in this second tier as it did in the first, and can be repeated

³⁵ *Id.*

³⁶ Bella, *supra* note 30, at 172.

³⁷ Schumann, *supra* note 24, at 11.

³⁸ Stapley, *supra* note 33.

³⁹ *Id.*

⁴⁰ State v. Jackson, 46 P.3d 257, 261 (Wash. Ct. App. 2002).

⁴¹ *Id.* at 261-262.

⁴² Maureen O'Hagan, *Court to Rule if Police Need Warrant for GPS Tracking*, SEATTLE TIMES, May 20, 2003, at B1.

⁴³ *Id.*

⁴⁴ United States v. McIver, 186 F.3d 1119 (9th Cir. 1999).

multiple times. In each case, officers will look for short stops at residences or businesses with a lot of volume, and tracks from suspected buyers going to such houses. No one will be detained or questioned until the status of the residence as a drug house is established . . . with a controlled buy . . . and probably not until the entire [drug] ring is rounded up [I]nnocent citizens' lives are not disrupted in any way.⁴⁵

The time and resources needed to accomplish the same task without GPS devices would be prohibitive.

ROBBERY INVESTIGATIONS: In Nassau County, New York, police placed a GPS tracker on the car of a robbery suspect, used the device to tail the suspect in real time just before his arrest, and then used its track as evidence placing the suspect in the vicinity of several robberies.⁴⁶ In Durham, New Hampshire, police used a GPS tracker attached to the car of a suspect to track and catch "Jack the Snipper," a serial intruder who cut clothes from sleeping women living near the University of New Hampshire.⁴⁷

PUBLIC CORRUPTION: In Clinton Township, New Jersey, complaints about police loafing prompted an internal affairs officer to place GPS trackers on several department patrol cars.⁴⁸ The investigation subsequently caught five officers whom GPS tracks showed loitering over meals or hanging out in parking lots when their official logs listed them as patrolling township streets or watching for speeders on local highways.⁴⁹ Four officers pleaded guilty to filing false records and were barred from working in New Jersey law enforcement; a fifth was convicted at trial on a records violation.⁵⁰

In Milwaukee, city police placed a GPS tracker on the department-issued car of the city's second-ranking police officer to help determine

⁴⁵ Schumann, *supra* note 24, at 60-61.

⁴⁶ *People v. Lacey*, No. 2463N/02, slip op. (N.Y. Nassau County Ct. May 6, 2004), available at http://www.courts.state.ny.us/reporter/3dseries/2004/2004_50358.htm.

⁴⁷ Brian DeKoning, *Police Reveal They Used GPS to Track "Snipper" Suspect*, UNION LEADER, Aug. 4, 2004, at A2.

⁴⁸ Charles Forelle, *GPS Units Keep Tabs On Employee Loafing*, CAREERJOURNAL.COM, <http://www.careerjournal.com/hrcenter/articles/20040603-forelle.html> (last visited Oct. 10, 2005).

⁴⁹ *Id.*

⁵⁰ *Id.* During one disputed period, the fifth officer's activity log showed him checking a residence, a cemetery, and several car dealerships while his GPS track placed him in a McDonald's parking lot. *Id.*

whether he violated a local law requiring the officer to live in Milwaukee proper.⁵¹

PROBATION VIOLATIONS: In northern California, local police used a GPS device to track the motor vehicle movements of a convicted child sex offender.⁵² The GPS track placed the suspect .16 miles from his victim's grade school⁵³ despite a court requirement that he remain at least one mile away.⁵⁴ His probation was revoked and he was sentenced to six years in prison.⁵⁵

HOSTAGE SITUATIONS: In Clayton County, Georgia, fifty new school buses were equipped with GPS.⁵⁶ The school system was "apparently attempting to avoid incidents such as the one that occurred last January in Pennsylvania when an armed man took thirteen children hostage on a 160-mile trip along the eastern seaboard. Frantic parents worried about their children's location as helicopters searched for the hijacked bus."⁵⁷

GPS is thus applicable to a wide variety of law enforcement problems and offers police substantial assistance in each situation.

III. DISCUSSION

A. FEDERAL LAW

1. Fourth Amendment Basics

Courts adjudicating cases involving the use of tracking technology analyze this issue under the Fourth Amendment, which prohibits unreasonable searches and seizures.⁵⁸

A "search" occurs when a government agent infringes on an expectation of privacy society considers reasonable.⁵⁹ "Precisely what is

⁵¹ John Diedrich, *Police Investigate Assistant Chief's Residency: He Keeps Apartment in Milwaukee, House in Country*, MILWAUKEE J. SENTINEL, Oct. 3, 2004, at B1, available at <http://www.jsonline.com/news/metro/oct04/263644.asp>.

⁵² *People v. Obujen*, No. H026715, 2005 Cal. App. Unpub. LEXIS 2017 (Cal. Ct. App. 2005).

⁵³ *Id.* at *15.

⁵⁴ *Id.* at *8.

⁵⁵ *Id.* at *19.

⁵⁶ *John Marshall National 2002 Moot Court Competition in Information Technology and Privacy Law: Brief for the Respondent*, 21 J. MARSHALL J. COMPUTER & INFO. L. 99, 114 (2002).

⁵⁷ *Id.*

⁵⁸ U.S. CONST. amend. IV.

⁵⁹ *United States v. Jacobsen*, 466 U.S. 109, 113 (1984).

reasonable varies from case to case.”⁶⁰ A “seizure” occurs when the government interferes meaningfully with an individual’s possessory interest in property.⁶¹ Such interference occurs, *inter alia*, when the government intentionally interferes with freedom of movement.⁶²

While the Fourth Amendment protects citizens against certain types of government intrusions, it does not provide a general constitutional right to privacy.⁶³ The Supreme Court has held that such a general “right to be let alone by other people . . . is left largely to the law of the individual States.”⁶⁴ This distinction is critical both to understanding GPS jurisprudence and to differentiating federal and state law on the subject.⁶⁵

Three cases form the core of federal law governing the use of tracking technologies: *Katz*, *Knotts*, and *Karo*.

In *Katz*, a 1967 decision, FBI agents attached an electronic listening and recording device to the outside of a phone booth Katz used in illegal gambling.⁶⁶ The government used the evidence to convict Katz of wire fraud.⁶⁷

While the device did not physically penetrate the phone booth in which Katz spoke, the Supreme Court found that the government violated the Fourth Amendment because its actions “violated the privacy upon which . . . [Katz] justifiably relied when using the telephone booth”⁶⁸ Katz, in other words, had a reasonable expectation of privacy while speaking inside the booth, an expectation the listening device violated through its functional penetration thereof.

In federal constitutional terms, privacy is not a function of geographic place, but rather place relative to privacy *expectations* which society deems legitimate. The determination whether any given locale legitimizes an expectation of privacy rests not on whether the place can be categorized and given a constitutionally significant geographic label, but instead on whether it is conceptually linked with intimacy and personal privacy.⁶⁹

⁶⁰ United States v. Bailey, 628 F.2d 938, 945 (6th Cir. 1980).

⁶¹ *Id.*

⁶² Mich. Dep’t of State Police v. Sitz, 496 U.S. 444, 450 (1990).

⁶³ Katz v. United States, 389 U.S. 347, 350 (1967).

⁶⁴ *Id.* at 351.

⁶⁵ See discussion *infra* Parts III.F.2.a, III.F.2.b.

⁶⁶ 389 U.S. at 348.

⁶⁷ *Id.*

⁶⁸ *Id.* at 353.

⁶⁹ Richard G. Wilkins, *Defining the “Reasonable Expectation of Privacy”: An Emerging Tripartite Analysis*, 40 VAND. L. REV. 1077, 1112 (1987). Alternatively, a reasonable expectation of privacy “usually expresses a conclusion that an individual’s privacy interests

That concept, however, is limited: while overturning Katz's conviction, the Supreme Court also noted that "[w]hat a person knowingly exposes to the public . . . is not a subject of Fourth Amendment protection."⁷⁰

United States v. Knotts marked the first time the Supreme Court considered the issue of electronic tracking devices.⁷¹ In *Knotts*, Minnesota law enforcement officers placed a beeper inside a container of chloroform they suspected would be used to manufacture illegal drugs.⁷² After the suspect purchased the container, officers followed the car in which the container was placed, maintaining contact by monitoring the beeper signals and by visual surveillance.⁷³ Using the beeper alone, police tracked the container to a secluded cabin in Wisconsin.⁷⁴ After obtaining a warrant, officers raided the cabin, finding the container in question and an illegal drug laboratory.⁷⁵

The defendant moved to suppress the government's evidence, arguing that the warrantless use of the beeper violated his Fourth Amendment rights.⁷⁶ Relying on *Katz*, the Court conducted a two-part inquiry: first, whether the individual, through his conduct, exhibited a subjective expectation of privacy, and second, whether that subjective expectation was one society would recognize as reasonable.⁷⁷

The Court ruled that the suspect had no reasonable expectation of privacy when he traveled on public roads. Justice Rehnquist wrote:

A person traveling . . . on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another. When [the suspect] traveled 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.⁷⁸

outweigh the interests of society." Dorothy J. Glancy, *Privacy on the Open Road*, 30 OHIO N.U. L. REV. 295, 332 (2004).

⁷⁰ *Katz*, 389 U.S. at 351. One observer writes, "In the federal courts, just the *possibility* of being seen, rather than the *fact* of being seen by law enforcement agents is all that is necessary to avoid Fourth Amendment search restrictions. What law enforcement officials *could* have perceived with their ordinary senses from and in public locations is not considered a search at all." Glancy, *supra* note 69, at 350 (emphasis added).

⁷¹ 460 U.S. 276 (1983).

⁷² *Id.* at 278.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.* at 279.

⁷⁶ *Id.*

⁷⁷ *Id.* at 280-81.

⁷⁸ *Id.* at 281-82.

Moreover, Rehnquist noted, “[v]isual surveillance from public places along [target] Petschen’s route or adjoining . . . [the premises in question] would have reveal[ed] all of these facts to the police. The fact that the officers . . . relied not only on visual surveillance, but also on the use of the beeper . . . does not alter the situation.”⁷⁹

Put another way, nothing in the Fourth Amendment prohibits police “from augmenting the sensory faculties bestowed upon them at birth with such enhancement as science and technology afforded them”⁸⁰

Previewing arguments that would be made in later GPS cases, the defendant argued the technological capabilities of a beeper were such that, without warrants, twenty-four hour surveillance “of any citizen of this country will be possible, without judicial knowledge or supervision.”⁸¹ The Court disagreed, noting that “if such dragnet-type law enforcement practices . . . eventually occur, there will be time enough . . . to determine whether different constitutional principles may be applicable.”⁸² Notably, the Court added, “We have never equated police efficiency with unconstitutionality, and we decline to do so now.”⁸³

Less than two years later, law enforcement use of beepers was again challenged in *United States v. Karo*, but this time with a different result.

In *Karo*, Drug Enforcement Administration agents installed a beeper in a can of ether they suspected was being used to extract cocaine from clothing imported into the United States.⁸⁴ Agents used the device to track the movement of the can and to monitor it inside a house in Taos, New Mexico.⁸⁵ The agents then used that information to secure a search warrant for the house.⁸⁶

The Supreme Court dismissed challenges to the installation of the beeper because doing so did not meaningfully interfere with any of the affected parties’ possessory interests and was therefore not a search.⁸⁷ “At most,” the Court noted, “there was a technical trespass on the space occupied by the beeper . . . [But] a physical trespass is only marginally relevant to . . . whether the Fourth Amendment has been violated. . . .”⁸⁸

⁷⁹ *Id.* at 282.

⁸⁰ *Id.*

⁸¹ *Id.* at 283.

⁸² *Id.* at 284.

⁸³ *Id.*

⁸⁴ *United States v. Karo*, 468 U.S. 705, 708 (1984).

⁸⁵ *Id.* at 709-10.

⁸⁶ *Id.* at 710.

⁸⁷ *Id.* at 712.

⁸⁸ *Id.* at 712-13.

Instead, the Court focused on the *monitoring* of the beeper while inside the house in question. It framed the legal question it faced as “whether the monitoring of a beeper in a private residence, a location not open to visual surveillance, violates the Fourth Amendment rights of those who have a justifiable interest in the privacy of the residence.”⁸⁹

Had a DEA agent entered the residence to verify the ether’s presence without a warrant, the Court wrote, “there is little doubt” the search would have been illegal.⁹⁰ For purposes of the Fourth Amendment, “the result is the same where, without a warrant, the Government surreptitiously employs an electronic device to obtain information that it could not have obtained by observation from outside the curtilage of the house.”⁹¹ Warrantless, device-based tracking inside a protected space therefore violates the Fourth Amendment.

2. *Limits on Fourth Amendment Protection*

The Fourth Amendment, while powerful in protecting against intrusion into the home and other areas deemed legitimately private, is limited in scope. As mentioned above, *Katz* shows that Fourth Amendment protection depends not simply on place, but also on privacy expectations society deems legitimate. Such legitimation “must have a source outside of the Fourth Amendment, either by reference to concepts of real or personal property law or to understandings that are recognized and permitted by society.”⁹² A burglar surreptitiously working in someone else’s home, for instance, may have an expectation of privacy, but it is not one which the law deems legitimate.⁹³

Second, while the curtilage of a home receives heightened protections, those protections also have limits. In *California v. Ciraolo*, for instance, the Supreme Court upheld warrantless aerial observation of a fenced-in backyard within the curtilage of a home.⁹⁴ Airborne officers spotted and

⁸⁹ *Id.* at 714.

⁹⁰ *Id.* at 715.

⁹¹ *Id.*; see also *California v. Ciraolo*, 476 U.S. 207, 212-13 (1986) (“The protection afforded the curtilage is essentially a protection of families and personal privacy in an area intimately linked to the home, both physically and psychologically, where privacy expectations are most heightened.”); *Oliver v. United States*, 466 U.S. 170, 180 (1984) (“[The curtilage is the] area to which extends the intimate activity associated with the ‘sanctity of a man’s home and the privacies of life.’”).

⁹² *Rakas v. Illinois*, 439 U.S. 128, 143 n.12 (1979).

⁹³ *Id.*; see also *United States v. Bailey*, 628 F.2d 938, 942 (6th Cir. 1980) (listing cases involving contraband in which courts found no legitimate expectation of privacy).

⁹⁴ 476 U.S. at 212-13.

photographed several marijuana plants, then used that information to obtain a search warrant.⁹⁵

In finding no Fourth Amendment violation, the Court noted that the observations in question took place within publicly navigable airspace and were conducted in a physically unintrusive manner.⁹⁶ “Any member of the public flying in this airspace who glanced down could have seen everything . . . the officers observed.”⁹⁷ In an age of routine air travel, Ciraolo was unreasonable in expecting his marijuana plants to be protected from aerial observation.⁹⁸

More generally, things plainly visible from public aerial thoroughfares do not warrant Fourth Amendment protection. The fact that a generally available technology—airplanes—facilitated the observation further supported the Court’s ruling.

Third, the Fourth Amendment does not extend to activities undertaken in public. In *United States v. Alonso*, for instance, the Tenth Circuit upheld warrantless use of a beeper to track an airplane police targeted in a drug smuggling investigation.⁹⁹ Relying on *Knotts*, the appeals court noted that such scientific or technological enhancement of visual surveillance of suspects in public routes “raises no constitutional issues which visual surveillance would not also raise.”¹⁰⁰ Per *Knotts*,

monitoring signals from an electronic tracking device that tells officers no more than that a specific aircraft is flying in . . . public airspace does not violate any reasonable expectation of privacy [N]o Fourth amendment violation results from such public detection. The movement of an airplane in the sky, like that of an automobile on a highway is not something in which a person can claim a reasonable expectation of privacy.¹⁰¹

3. *The Fourth Amendment Applied to Cars*

GPS trackers are often used to track motor vehicle movement. An examination of the Fourth Amendment as applied to cars is thus pertinent.

Supreme Court rulings have defined significantly reduced expectations of Fourth Amendment privacy in motor vehicles since those vehicles

⁹⁵ *Id.* at 209.

⁹⁶ *Id.* at 213.

⁹⁷ *Id.*

⁹⁸ *Id.* at 214.

⁹⁹ 790 F.2d 1489, 1495 (10th Cir. 1986).

¹⁰⁰ *Id.* at 1494 (citing *United States v. Knotts*, 460 U.S. 276, 284 (1983)).

¹⁰¹ *Id.* (emphasis added).

provide transportation and rarely serve as a residence or repository of personal effects.¹⁰² Cars,

unlike homes, are subject to pervasive[,] . . . continuing governmental regulation and controls, including periodic inspection and licensing requirements . . . [P]olice regularly stop and examine vehicles when license plates or inspection stickers have expired, or if other violations, such as exhaust fumes or excessive noise . . . are noted, or if headlights or other safety equipment are not in proper working order.¹⁰³

The Supreme Court permits warrantless seizures of cars absent individualized suspicion by allowing sobriety¹⁰⁴ and U.S. Border Patrol immigration checkpoints.¹⁰⁵ Police may also open vehicle doors without warrants to determine a car's vehicle identification number (VIN).¹⁰⁶

GPS trackers are typically attached to the outside of a car, an area to which federal courts grant almost no protection. The Tenth Circuit, for example, noted that the undercarriage of a car "is part of the car's exterior, and as such, is not afforded a reasonable expectation of privacy."¹⁰⁷ That ruling was based in part on the Supreme Court's *Cardwell v. Lewis* decision, which said that taking paint scrapings from the exterior of a car parked in a public parking lot did not require probable cause or a warrant.¹⁰⁸ Seven years after *Cardwell*, a federal district court said the warrantless installation of a beeper on the outside of a vehicle "does not violate the Fourth Amendment since the expectation of privacy is low and the intrusiveness is not so great."¹⁰⁹

The already-limited Fourth Amendment protections available to persons in public, then, do not apply to cars because those vehicles can be searched or seized without warrants under a variety of circumstances.

B. LATEST FEDERAL GPS CASES

At present, federal courts have only specifically considered the use of GPS trackers three times. However, only one of these cases considered the unique technological capabilities of GPS in rendering its decision.

¹⁰² *New York v. Class*, 475 U.S. 106, 112-13 (1986).

¹⁰³ *Id.* at 113.

¹⁰⁴ *Mich. Dep't of State Police v. Sitz*, 496 U.S. 444 (1990).

¹⁰⁵ *United States v. Martinez-Fuerte*, 428 U.S. 543 (1976).

¹⁰⁶ *Class*, 475 U.S. at 114.

¹⁰⁷ *United States v. Rascon-Ortiz*, 994 F.2d 749, 754 (10th Cir. 1993).

¹⁰⁸ 417 U.S. 583, 591 (1974).

¹⁰⁹ *United States v. Strmel*, 574 F. Supp. 793, 802 (E.D. La. 1983). Similar reasoning is evident in the Supreme Court's decision upholding anti-narcotics canine sniffs around the exterior of cars during roadside stops by police. *Illinois v. Caballes*, 125 S. Ct. 834 (2005).

The Ninth Circuit decided the first case, *United States v. McIver*, in 1999.¹¹⁰ Narcotics agents without a warrant placed both a GPS tracker and a “bird dog” beeper on the undercarriage of a suspect’s sport utility vehicle while it was parked in his driveway.¹¹¹ The case facts were such that the circuit court deemed the vehicle’s location to be outside the curtilage of the home in question.¹¹²

The circuit court ruled that the warrantless installation was proper for two reasons. First, suspect McIver never proved that he intended to preserve the vehicle’s undercarriage as private—that is, “free from warrantless government intrusion.”¹¹³ Hence, the court could not find that a search had occurred. Second, McIver never presented evidence that placement of the tracker deprived him of dominion and control of his vehicle or caused any damage to its electronic components.¹¹⁴ Thus, no seizure occurred either. Together, these facts meant that the installation did not violate the Fourth Amendment.

In the second case, *United States v. Berry*, the Federal District Court for the District of Maryland hypothesized that GPS-based tracking might fall outside the *Knotts* precedent, but did not reach that issue in its ruling.¹¹⁵ There, police obtained a court order from a Baltimore County Circuit Court to install a GPS tracker under the bumper of a suspect’s vehicle.¹¹⁶ Police used information gathered from the device to obtain a search warrant issued by a federal district court and later found heroin and drug paraphernalia during their search.¹¹⁷

The federal court relied upon the valid state court search warrant in denying the defendants’ suppression motion.¹¹⁸ However, the court also suggested that GPS might fall outside the beeper precedents discussed *supra* based on a comparison between beepers and GPS trackers.

Specifically, the district court said that GPS effectively served as a *substitute* for police surveillance during the investigation.¹¹⁹ This use distinguished the case from beeper cases in which tracking technology

¹¹⁰ 186 F.3d 1119 (9th Cir. 1999); *see also* *United States v. Eberle*, 993 F. Supp. 794 (D. Mont. 1998).

¹¹¹ *McIver*, 186 F.3d at 1126. The GPS tracker used in this case malfunctioned after three days. *Id.* at 1123.

¹¹² *Id.*

¹¹³ *Id.* at 1127.

¹¹⁴ *Id.*

¹¹⁵ 300 F. Supp. 2d 366, 368 (D. Md. 2004).

¹¹⁶ *Id.* at 367.

¹¹⁷ *Id.*

¹¹⁸ *Id.* at 368.

¹¹⁹ *Id.*

merely *augmented* visual surveillance. In contrast, police stored movement information on the GPS device and later downloaded it.¹²⁰ In practical terms, the device “neither assisted the police in ‘tailing’ . . . [the suspect’s] vehicle nor told them where the car was currently located.”¹²¹ This temporal disconnect meant the use of the device might not qualify as a sensory enhancement. The court thus limited its definition of “sensory enhancement” to devices used in real-time during surveillance operations.

Consistent with this definition, the court observed that more sophisticated GPS devices can track a target in real time, showing the target’s location on a map.¹²² Such advanced versions, the court said, might “be viewed as a more sophisticated beeper” and thus would not invade a reasonable expectation of privacy under *Katz*.¹²³ Even so, the court suggested that the substantial amount of data GPS devices provide and their ability to store such data might prompt the Supreme Court to consider the technology “so intrusive that . . . police must obtain a court order before using it.”¹²⁴

The *Berry* court relied on the recording capability of GPS to question the technology’s status as a sensory enhancement that would be excused from warrant requirements. However, this approach was both different from Supreme Court precedent¹²⁵ and contrary to federal district court

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ In *Kyllo v. United States*, the Supreme Court effectively defined “sensory enhancement” when it ruled that government use of a “device not in general public use to explore details of the home that would previously have been unknowable without physical intrusion” is a “search” requiring a warrant. 533 U.S. 27, 40 (2001). This is consistent with the Court’s ruling in *Karo*, discussed *supra*. Notably, the *Kyllo* Court did not include a recording, or backward-looking, capability in setting this standard.

Some state and federal courts “have distinguished between devices that ‘improve’ human senses and devices that ‘replace’ them, with the latter being more likely to implicate the Fourth Amendment.” Christopher Slobogin, *Technologically-Assisted Physical Surveillance: The American Bar Association’s Tentative Draft Standards*, 10 HARV. J.L. & TECH. 383, 395 (1997) (emphasis added). For instance, a device which

sees *through* walls could be said to replace one’s senses . . . because it sees things that the police might never be able to see with the eye. Conversely, when enhancement devices simply ‘confirm’ something *already seen* by the naked eye, or see something that *could be viewed* with the naked eye but for fear of discovery, the use is less likely to be seen as a search”

Id. at 396 (emphasis added); see also Glancy, *supra* note 69.

rulings.¹²⁶ As such, it provides a questionable challenge to the warrantless use of GPS under federal law.

In the third case, *United States v. Moran*, narcotics agents installed GPS devices on a suspect's vehicle without obtaining a warrant.¹²⁷ The court denied the defendant's motion to suppress the evidence obtained through the devices, relying on *Knotts* dicta that a person traveling on public thoroughfares has no legitimate expectation of privacy.¹²⁸ Police in *Moran* were investigating alleged drug trafficking by members of the Hell's Angels biker gang.¹²⁹

C. KYLLO AND ITS IMPLICATIONS FOR GPS

The Supreme Court's ruling in *Kyllo v. United States* articulates a standard governing when a particular police technology implicates Fourth Amendment concerns. In *Kyllo*, police used a thermal-imaging device to determine whether the occupants of a triplex were using high-intensity lamps to grow marijuana inside their home.¹³⁰ The Court found that the use of the device constituted a search because it enabled police to obtain information about the interior of the home that could not otherwise have been obtained without physically entering that protected space, "at least where (as here) the technology in question is not in general public use."¹³¹ The dissent called this approach a "new rule."¹³²

According to one commentator, the Court's reference to the "general public" centers on "openness to all people without restrictions to any class or group within the community."¹³³ State court decisions provide many pre-*Kyllo* examples of judicial reliance on this general public use

¹²⁶ Federal courts have approved warrantless surveillance of activity in public through other types of recording devices. In *MR v. Lincolnwood Board of Education*, for instance, a federal district court relied on multiple precedents in finding that "videotaping in public areas does not violate any constitutional right of privacy nor constitute an illegal search or seizure." 843 F. Supp. 1236, 1239 (N.D. Ill. 1994). In that case, the recording capability of the technology in question served as a substitute for the real-time presence of human observers. Nevertheless, the court found no issue with that arrangement.

¹²⁷ 349 F. Supp. 2d 425, 467 (N.D.N.Y. 2005).

¹²⁸ *Id.*

¹²⁹ Brendan Lyons, *Ruling Gives Cops Leeway with GPS*, TIMES UNION, Jan. 11, 2005, at A1.

¹³⁰ 533 U.S. at 29.

¹³¹ *Id.* at 34 (emphasis added).

¹³² *Id.* at 47 (Stevens, J., dissenting).

¹³³ Douglas Adkins, *The Supreme Court Announces a Fourth Amendment "General Public Use" Standard for Emerging Technologies but Fails to Define It: Kyllo v. United States*, 27 U. DAYTON L. REV. 245, 253 (2002).

rationale.¹³⁴ Federal courts “have used this same kind of language in concluding that no search occurs when police use zoom or other magnification lenses to observe curtilage.”¹³⁵

This linkage followed the Court’s landmark ruling in *Dow Chemical Co. v. United States*, where the Court upheld aerial photography of an industrial complex in part because of the general availability of the technology federal authorities used.¹³⁶ It “may well be,” the Court wrote, “that surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public . . . might be constitutionally proscribed absent a warrant.”¹³⁷ However, the U.S. Environmental Protection Agency had used “a conventional, albeit precise, commercial camera commonly used in mapmaking” to conduct surveillance.¹³⁸ The use of that easily-obtained technology could not be used as a basis for invoking Fourth Amendment protections.

Kyllo is thus a logical extension of the technology standard established in *Dow* and, to a lesser extent, *Ciraolo*. Its rule: a surveillance technology’s limited public availability provides a litigant one basis upon which to invoke Fourth Amendment protection. Conversely, surveillance conducted with widely-available technology carries some presumption of legal permissibility. “This standard is associated with an assumption-of-risk rationale because once the device is in ‘general public use,’ the public assumes the risk of protecting itself from the use of that technology.”¹³⁹ Alternatively, the “focus on public access relies on the assumption that once a technology becomes available to the public, persons no longer have an objectively reasonable expectation of privacy that would prohibit its use.”¹⁴⁰

This approach has enormous implications on whether courts could require warrants for GPS tracking given its increasing penetration into both the commercial and consumer vehicle markets.¹⁴¹

¹³⁴ Christopher Slobogin, *Peeping Techno-Toms and the Fourth Amendment: Seeing Through Kyllo’s Rules Governing Technological Surveillance*, 86 MINN. L. REV. 1393, 1400 (2002).

¹³⁵ *Id.*

¹³⁶ 476 U.S. 227, 228 (1986).

¹³⁷ *Id.* at 238.

¹³⁸ *Id.* at 251 (Powell, J., concurring in part and dissenting in part).

¹³⁹ Sean D. Thueson, *Fourth Amendment Search—Fuzzy Shades of Gray: The New “Bright Line” Rule in Determining When the Use of Technology Constitutes a Search*, 2 WYO. L. REV. 169, 195 (2002).

¹⁴⁰ Amy Miller, *Kyllo v. United States: New Law Enforcement Technologies and the Fourth Amendment*, 51 KAN. L. REV. 181, 190 (2002).

¹⁴¹ For a brief overview of the impact of GPS on everyday life, see Francine Brevetti, *Wider Use of GPS May Remap How We Live*, OAKLAND TRIB., Jan. 11, 2004, Business, at 1.

D. INTEGRATION OF GPS TECHNOLOGY INTO U.S. MOTOR VEHICLES

1. GPS-Based Vehicle Tracking Systems

GPS and other remote vehicle tracking technologies are widely present in the United States. For purposes of a *Kyllo* analysis, such devices should be considered “surveillance” devices.

a. Telematics and Fleet Management

A large industry exists around automotive “telematics.” “In the automobile industry, *telematics* refers to the provision of voice and data communication between the vehicle and information service providers.”¹⁴² Industry financial analysts predict continued growth in the business. One market research firm projects the North American market to reach \$7 billion by 2007.¹⁴³

“Fleet management” is one segment of the larger telematics industry. Commercial trucking companies use Electronic Vehicle Management Systems (EVMS), many incorporating satellite tracking, to record their vehicles’ geographic locations and to provide near real-time data connections between drivers and dispatchers.¹⁴⁴ This information enables dispatchers to better allocate trucks and thereby boost capacity utilization, a critical factor in a shipper’s profitability.¹⁴⁵ In 1992, 11.1 percent of trucks surveyed by the U.S. Bureau of the Census’ Truck Inventory and Use Surveys used such systems.¹⁴⁶ By 1997, that figure had risen to 24.9 percent.¹⁴⁷ The most popular systems cost only \$100 per month per truck to lease, including messaging costs.¹⁴⁸ One industry analyst predicts that over 1.3 million fleet vehicles—those dispatched as part of a fleet, such as taxis, buses, delivery vans and tractor-trailers—will be equipped with automatic

¹⁴² GLOBAL EQUITY RESEARCH, UBS WARBURG, WORLDWIDE TELEMATICS INDUSTRY: EYES ON THE ROAD AND HANDS ON THE WHEEL (2000) (emphasis added) (on file with author).

¹⁴³ C. Kenneth Orski, *The State of U.S. Telematics*, <http://rji.cc/features/ITSCooperativeDeployment.htm> (last visited Oct. 10, 2005). For more information on Orski, see Innovation Briefs, <http://www.innobriefs.com/about.html> (last visited Oct. 10, 2005).

¹⁴⁴ Thomas Hubbard, *Information, Decisions, and Productivity: On-Board Computers and Capacity Utilization in Trucking*, 93 AM. ECON. REV. 1332 (2003).

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at 1335.

¹⁴⁷ *Id.* The Survey is taken every five years as part of the Census of Transportation and takes a random sample of trucks from vehicle registration records. *Id.* at 1333.

¹⁴⁸ *Id.* at 1349.

vehicle trackers by 2005.¹⁴⁹ An internet search finds a large number of companies offering such services for both long-haul and local fleets.¹⁵⁰

In addition, at least one rental car agency equipped its rental fleet with GPS trackers, then used the technology to fine customers for speeding while driving their rented vehicles.¹⁵¹

b. Passenger Car Tracking

Several companies today market GPS tracking devices to parents of teenage drivers. The devices cost from \$140 to over \$400 plus monthly fees for options which use GPS technology.¹⁵² They monitor a vehicle's path of travel, speed, and length of time spent at a location.¹⁵³ Some devices even notify parents when the vehicle travels outside a particular boundary or exceeds a certain speed.¹⁵⁴ Several can be purchased online.¹⁵⁵

¹⁴⁹ Charles Forelle, *On the Road Again, But Now the Boss is Sitting Beside You*, WALL ST. J., May 14, 2004, at A1.

¹⁵⁰ See Advanced GPS Store, <http://www.advancedgpsstore.com/gps-tracking-device.asp> (last visited Oct. 10, 2005); Advanced Tracking Technologies, Inc., <http://www.advanttrack.com> (last visited Oct. 10, 2005); Affordable GPS Vehicle Tracking Systems, <http://www.123-vehicle-tracking.com> (last visited Oct. 10, 2005); Appian Logistics Software, Inc., <http://www.appianlogistics.com/drtrack.asp> (last visited Oct. 10, 2005); Employer's Asset Protection, <http://www.eaprotection.com/gpstrack/Default.htm> (last visited Oct. 10, 2005); FleetBoss Global Positioning Solutions, <http://www.fleetboss.com> (last visited Oct. 2, 2005); Fleet Management Solutions, <http://www.fmsgps.com> (last visited Oct. 10, 2005); GPS Fleet Solutions, <http://www.gpsfleetsolutions.com> (last visited Oct. 10, 2005); GuardMagic, <http://www.guardmagic.com> (last visited Oct. 10, 2005); InSight USA, <http://www.mds-inc.com> (last visited Oct. 10, 2005); Navtrack, <http://www2.navtrak.net> (last visited Oct. 10, 2005); MightyGPS.com, <http://mightygps.com/mightygpstrackingsolutions.htm> (last visited Oct. 10, 2005); Networkcar, <http://www.networkcar.com/networkcar/pub/main> (last visited Oct. 10, 2005); Teletrac, <http://www.teletrac.net> (last visited Oct. 10, 2005); Track Your Truck, <http://www.trackyourtruck.com> (last visited Oct. 10, 2005); Vehicle Tracking Using GPS, <http://www.mobiletimeclock.com> (last visited Oct. 10, 2005).

¹⁵¹ Renenger, *supra* note 23, at 554. In 2004, the California State Assembly passed legislation which forbade car rental companies from using electronic surveillance technology to monitor renters. *Lawmakers Pass Tracking Device Bill*, KRON4, Aug. 16, 2004, <http://www.kron4.com/global/story.asp?s=2181927>.

¹⁵² Michelle Higgins, *A Back-Seat Driver for Your Teen's Car*, WALL ST. J., Feb. 23, 2005, at D1; see also Catherine Skipp & Arian Campo-Flores, *Spying On Speeders*, NEWSWEEK, June 7, 2004, at 80; Elizabeth Williamson, *Teens Taking Parental Spies Along for the Ride*, CHI. TRIB., Mar. 10, 2005, § 5, at 1.

¹⁵³ Higgins, *supra* note 152.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

c. Anti-Theft Systems

Vehicle tracking systems are also available for protection against theft. One system, made by LoJack Corporation,¹⁵⁶ uses a radio frequency transmitter hidden in a car to broadcast signals when a vehicle is stolen.¹⁵⁷ Police equipped with company-issued tracking equipment trace the signal to locate the stolen vehicle.¹⁵⁸

LoJack launched its product in 1986.¹⁵⁹ Today, the system is installed in approximately 4,000,000 cars in the United States.¹⁶⁰ By the end of 2004, police recovered 75,000 stolen vehicles using the system.¹⁶¹ The company recently entered the motorcycle market.¹⁶²

2. Other Relevant Vehicle Location Technologies

a. Passenger Car Navigation

OnStar, a GPS location service provider for private cars, reached the 3,000,000 subscriber milestone in late 2004.¹⁶³ The service is currently available on fifty General Motors models and select models of six other auto makers.¹⁶⁴ GM plans to make the service standard on its new cars and trucks sold in the U.S. by the end of 2007.¹⁶⁵ The company had a twenty-

¹⁵⁶ See LoJack, <http://www.lojack.com> (last visited Oct. 10, 2005).

¹⁵⁷ See LoJack, *What is LoJack?*, <http://www.lojack.com/what/how-lojack-works.cfm> (last visited Oct. 10, 2005).

¹⁵⁸ *Id.*

¹⁵⁹ Telephone Interview with Jeanne Bock, Spokesperson, LoJack, in Lexington, Va. (Feb. 23, 2005).

¹⁶⁰ *Id.*

¹⁶¹ Press Release, LoJack Corp., LoJack Recovers Milestone 75,000th Stolen Vehicle (Dec. 13, 2004), available at <http://www.lojack.com/pdf/121304release.pdf>.

¹⁶² See LoJack, *LoJack for Motorcycles*, <http://www.lojack.com/products-services/auto-security-system/lojack-for-motorcycles.cfm> (last visited Oct. 10, 2005).

¹⁶³ Press Release, OnStar, OnStar Reaches Three-Million-Subscribers Milestone (Dec. 16, 2004), available at http://onstar.internetpressroom.com/prr_releases_detail.cfm?id=305.

¹⁶⁴ *Id.*

¹⁶⁵ See GM, *Only GM*, <http://www.gm.com/company/onlygm/> (last visited Oct. 10, 2005); see also Renenger, *supra* note 23, at 553-54 (“General Motors is [also] integrating ‘black box’ technology into its cars. Coupled with GPS, the boxes could record exactly where the car has been and whether the driver was breaking any driving laws.”); *General Motors Advertisement*, CHI. TRIB., Jan. 31, 2005, at A9.

seven percent share of the U.S. auto market in calendar 2004.¹⁶⁶ Police have used such factory-installed systems to recover stolen vehicles.¹⁶⁷

b. Electronic Toll Collection

Electronic toll collection systems provide government agencies with another way to track vehicle movement, albeit in a more limited fashion than with GPS. System subscribers attach transponders to their cars.¹⁶⁸ As drivers pass through specially-equipped toll plazas, toll charges are debited from the user's pre-paid accounts.¹⁶⁹ The systems keep a log of where and when each customer passes through a participating toll plaza for billing purposes, thus providing police with one way to track a target's movement.¹⁷⁰ Several systems exist in the United States today. The E-ZPass system covers New York, New Jersey, Massachusetts, Pennsylvania, Delaware, Maine, Maryland, Virginia, and West Virginia.¹⁷¹ The I-Pass system covers Illinois,¹⁷² and the FasTrak system operates in California.¹⁷³

As of March 2005, the New York portion of the E-ZPass system had 2.8 million active accounts.¹⁷⁴ The I-Pass system issued 1.9 million transponders through January 31, 2005.¹⁷⁵ New Hampshire and Illinois are expected to join the E-ZPass system shortly.¹⁷⁶

E. OTHER RELATED CONSUMER APPLICATIONS OF GPS

One additional GPS application bears mention to further illustrate the general availability of GPS tracking and its increasing integration into daily

¹⁶⁶ *GM: Not Conceding U.S. Market Share*, AUTO CHANNEL, Dec. 4, 2004, <http://www.theautochannel.com/N/news/2004/12/04/295034.html>. Market share quoted is 11-month data, not full calendar year. *Id.*

¹⁶⁷ *See State v. Clifton*, 580 S.E.2d 40, 42 (N.C. Ct. App. 2003); *see also OnStar*, *supra* note 163.

¹⁶⁸ Timothy Joseph Duva, *You Get What You Pay For . . . and So Does the Government: How Law Enforcement Can Use Your Personal Property to Track Your Movements*, 6 N.C. J. L. & TECH. 165, 170 (2004).

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ Telephone Interview with Charlene Allen, Spokesperson, E-Zpass, in New York, N.Y. (Mar. 3, 2005); *see The Port Authority of New York and New Jersey*, *The Port Authority of New York and New Jersey*, <http://www.panynj.gov/> (last visited Oct. 10, 2005).

¹⁷² Illinois State Toll Authority, I-Pass, *Where Can I Use I-Pass?*, <http://www.illinoistollway.com/> (follow "I-Pass" hyperlink; then follow "Where Can I Use I-Pass?" hyperlink) (last visited Oct. 10, 2005).

¹⁷³ *See FasTrak*, <http://www.511.org/fastrak/> (last visited Oct. 10, 2005).

¹⁷⁴ Telephone Interview with Charlene Allen, *supra* note 171.

¹⁷⁵ *See Illinois State Toll Authority*, *supra* note 172.

¹⁷⁶ Telephone Interview with Charlene Allen, *supra* note 171.

life. At present, Federal Communications Commission regulations require that all new cellular phones activated since December 31, 2002 include E911 (“Enhanced 911”) technology, which allows emergency personnel to locate a 911 caller anywhere in the country via a GPS device contained in the caller’s phone.¹⁷⁷ FCC regulations call for 95 percent of all active cell phones to be equipped with the technology by December 31, 2005.¹⁷⁸ Thus, “should the government choose to employ them, E911 systems provide a direct way of tracking any member of the escalating cellular phone user population.”¹⁷⁹ This fact is particularly significant since many people use their phones while driving.

The current extent of vehicle-focused and related GPS technology available to the public suggests that its use by police should not implicate Fourth Amendment concerns under *Kyllo*.

F. GPS LAW IN STATE COURTS

Courts in at least five states have addressed the issue of using beepers or GPS to track suspect vehicles.

1. States Which Do Not Require Warrants

Relying on *McIver*, *Knotts*, and *Karo*, a California appeals court ruled that attaching a GPS monitor to the outside of a vehicle without a warrant and monitoring its signals while the vehicle traveled public streets did not violate state law.¹⁸⁰ The Supreme Court of Nevada made an almost identical finding in *Osburn v. State*.¹⁸¹

2. States Which Require Warrants

a. Oregon

State courts in Oregon, Washington, and New York require police to obtain warrants before using vehicle tracking technology. Washington and New York courts specifically considered GPS in their rulings.

In *State v. Campbell*, the Supreme Court of Oregon ruled that police use of a beeper constituted a search which required a warrant or an exigency that would obviate the need for one.¹⁸² Police had used the beeper

¹⁷⁷ *Duva*, *supra* note 168, at 168.

¹⁷⁸ *Id.*

¹⁷⁹ *Id.* at 169.

¹⁸⁰ *People v. Zichwic*, 114 Cal. Rptr. 2d 733, 742-43 (Cal. Ct. App. 2002).

¹⁸¹ 44 P.3d 523, 526 (Nev. 2002).

¹⁸² 759 P.2d 1040, 1049 (Or. 1988).

to track a burglary suspect because the rural nature of the area in which he lived made covert surveillance impractical.¹⁸³ They attached a beeper to the underside of the suspect's car while it was parked in a public parking lot.¹⁸⁴

At issue was how to interpret Article I, Section 9 of the Oregon Constitution, the state's analogue to the federal Fourth Amendment.¹⁸⁵ While the text of the Oregon law is similar to that of the federal Constitution, the Oregon Supreme Court construed its reach more broadly. Rather than framing the Oregon amendment simply as a protection against unreasonable search or seizure, the Oregon court described the privacy interest protected by the amendment as "freedom from particular forms of scrutiny."¹⁸⁶

Applying that concept to the beeper, the court wrote,

Any device that enables the police quickly to locate a person or object anywhere within a 40-mile radius, day or night, over a period of several days, is a significant limitation on freedom from scrutiny The limitation is made more substantial by the fact that the radio transmitter is much more difficult to detect than would-be observers who must rely upon the sense of sight. Without an ongoing, meticulous examination of one's possessions, one can never be sure that one's location is not being monitored by means of a radio transmitter.¹⁸⁷

The Oregon approach specifically rejects the idea that the use of a particular surveillance technology may be excused from constitutional burdens either because the target is exposed to public view¹⁸⁸ or because the technology is merely sense-enhancing.¹⁸⁹

b. Washington

Similar arguments played a vital role in *State v. Jackson*, a landmark case involving GPS tracking by police in Washington State.¹⁹⁰ The case provides a striking example of the impact GPS can have in a criminal

¹⁸³ *Id.* at 1041.

¹⁸⁴ *Id.* at 1041-42.

¹⁸⁵ Compare OR. CONST., art. I, § 9, with U.S. CONST. amend. IV.

¹⁸⁶ *Campbell*, 759 P.2d at 1047.

¹⁸⁷ *Id.* at 1048. The U.S. Supreme Court decisions discussed *supra* make no such mention of scrutiny per se.

¹⁸⁸ *Id.* at 1045-46 ("The issue is not whether what the police learned by using the transmitter . . . was 'exposed to public view,' but whether using the transmitter is an action that can be characterized as a search.").

¹⁸⁹ *Id.* at 1045 ("Whether police conduct is a search does not turn on whether its object could be discovered by conduct that is not a search."):

¹⁹⁰ 46 P.3d 257 (Wash. Ct. App. 2002).

investigation and marks the first time that a major court specifically ruled on police use of GPS technology.

On the morning of October 18, 1999, Brad Jackson called 911 to report his nine-year-old daughter Valiree missing.¹⁹¹ Investigators eventually identified three likely scenarios to explain the girl's disappearance, one of which involved wrongdoing by Jackson.¹⁹²

On October 23, authorities obtained and executed search warrants for Jackson's home and two cars, but found no incriminating evidence.¹⁹³ Three days later, police obtained warrants to attach GPS trackers to Jackson's two vehicles and installed them while the vehicles were impounded.¹⁹⁴ A detective then told Jackson that he knew Jackson had buried Valiree without sufficient time to keep animals from digging her up and that the body would be found.¹⁹⁵

On November 6 and November 10, police analyzed the GPS tracks. The November 6 track showed Jackson turning onto an unmarked logging road, then stopping for 44 minutes at a site the Jackson family had used as a secret hunting spot.¹⁹⁶ The November 10 track showed Jackson stopping at a second site for sixteen minutes, then driving fifty miles back to the site of the November 6 track.¹⁹⁷

Investigators inspected both sites. They found the victim's body at the November 6 site and plastic bags with duct tape containing blood and hair later matched via DNA to the victim at the November 10 site.¹⁹⁸ Additional forensic evidence recovered at the sites implicated Jackson.¹⁹⁹ Police arrested Jackson on November 13.²⁰⁰ He was eventually convicted of first-degree murder and received a sentence of 672 months.²⁰¹

In less than four weeks, police had gone from a report of a disappearance to recovering the victim's body and other critical forensic evidence—in substantial part because of information obtained through GPS tracking.

¹⁹¹ *Id.* at 260.

¹⁹² *Id.* at 261.

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ *Id.*

¹⁹⁶ *Id.*

¹⁹⁷ *Id.*

¹⁹⁸ *Id.* at 262.

¹⁹⁹ *Id.*

²⁰⁰ *Id.*

²⁰¹ *Id.*

Jackson appealed his conviction, arguing, *inter alia*, that the use of GPS trackers violated the Washington state constitution. The state appellate court rejected the argument since police had obtained warrants to install and monitor the devices.²⁰² That court, however, also ruled that “no search warrant was required under the state or federal constitution”²⁰³ since Jackson was tracked after voluntarily exposing his movements in public.²⁰⁴ It ruled this way even though the relevant section of the state constitution was generally more protective than the Fourth Amendment.²⁰⁵ The court, however, hedged, writing that it was “not convinced [that] probable cause for a search warrant will always be irrelevant for GPS use cases.”²⁰⁶

Jackson appealed to the Washington Supreme Court. The court affirmed Jackson’s conviction, but reversed the appellate court’s GPS ruling, holding that police had to obtain warrants before using GPS tracking devices.²⁰⁷

The high court focused on two concerns. First, the court viewed GPS not as a sense-augmenting device, but, rather, as “a technological substitute” for police surveillance.²⁰⁸ The court reached this conclusion by examining the literal application of GPS technology, observing that

when a GPS device is attached to a vehicle, law enforcement officers do not in fact follow the vehicle. Thus, unlike binoculars . . . the GPS device does not merely augment the officers’ senses, but rather provides a technological substitute for traditional visual tracking. Further, the devices in this case were in place for approximately two and one-half weeks. It is unlikely that the sheriff’s department could have successfully maintained uninterrupted 24-hour surveillance through this time by following [suspect] Jackson . . .²⁰⁹

The court perceived “a difference between the . . . uninterrupted, twenty-four-hour-a-day surveillance possible through use of a GPS device, which does not depend upon whether an officer could . . . have maintained visual contact over the tracking period, and an officer’s use of binoculars . . . to augment his . . . senses.”²¹⁰

The court was thus concerned about the way the device expanded the surveillance capability of law enforcement officers. The court seemed to view increases in police efficiency—and, therefore, police “reach”—as a

²⁰² *Id.* at 268–69.

²⁰³ *Id.* at 272.

²⁰⁴ *Id.* at 269–70.

²⁰⁵ *Id.* at 270; *see also* WASH. CONST. art. I, §7.

²⁰⁶ *Id.* at 272.

²⁰⁷ *State v. Jackson*, 76 P.3d 217 (Wash. 2003).

²⁰⁸ *Id.* at 223.

²⁰⁹ *Id.*

²¹⁰ *Id.*

danger about which a court should be concerned. This outlook contrasts sharply with that of the U.S. Supreme Court, which embraced technology-based efficiency in *Knotts*.²¹¹

In the case of GPS, that efficiency is so great that, according to the American Civil Liberties Union of Washington, “[i]t is the equivalent of placing an invisible officer in the back seat of a person’s car.”²¹² Accepting this conception, the device represents a penetration into the otherwise protected interior of one’s car.

Second, relying on the Oregon Supreme Court’s *Campbell* ruling, the Washington court said GPS would undermine the freedom from scrutiny guaranteed by the Washington constitution—a protection greater than that provided by the U.S. Constitution.²¹³

“In this age,” the court observed, “vehicles are used to take people to a vast number of places that can reveal preferences, alignments, associations, personal ails and foibles GPS devices record all of these travels and thus can provide a detailed picture of one’s life.”²¹⁴ More precisely,

the intrusion into private affairs made possible with a GPS device is quite extensive [T]he device can provide a detailed record of travel to doctor’s offices, banks, . . . casinos, . . . places of worship, political party meetings, bars, grocery stores, . . . gyms, places where children are dropped off for school, play, or day care, . . . the strip club, the opera, the baseball game, the ‘wrong’ side of town, the family planning clinic.²¹⁵

Thus, the use of GPS constituted an intrusive search subject to warrant requirements under state law.²¹⁶

The fact that GPS trackers in this case were actually wired into the vehicles’ electrical systems for power,²¹⁷ rather than merely attached to the outside of Jackson’s vehicle without such penetration, may have provided an intellectual starting point for the court’s ruling. This fairly involved, complex, mechanical arrangement meant that the trespass committed upon Jackson’s property was more than de minimis and, therefore, a legally

²¹¹ See discussion *supra* Part III.A.1.

²¹² Press Release, Am. Civil Liberties Union, In Landmark Ruling, Washington Supreme Court Says Police Need Warrant for Surveillance with Global Tracking Devices (Sept. 11, 2003) (on file with author).

²¹³ *Jackson*, 76 P.3d at 223. Unlike federal courts, the Washington Supreme Court prohibits sobriety checkpoints. *Mesiani v. City of Seattle*, 755 P.2d 775 (Wash. 1988); see also *State v. Boland*, 800 P.2d 1112 (Wash. 1990) (warrantless search of a person’s garbage); *State v. Gunwall*, 720 P.2d 808 (Wash. 1986) (warrantless use of a pen register).

²¹⁴ *Jackson*, 76 P.3d at 223.

²¹⁵ *Id.*

²¹⁶ *Id.* at 231.

²¹⁷ *Id.* at 221.

significant seizure affecting Jackson's possessory interests in the vehicles.²¹⁸

c. New York

A New York trial court recently ruled that law enforcement use of GPS constitutes a seizure which requires police to obtain a warrant or else demonstrate exigent circumstances.²¹⁹ In that case, officers used a GPS device to track a burglary suspect.²²⁰

While the court discussed the technological sophistication of GPS relative to beepers,²²¹ its ruling instead emphasized property rights concerns relative to installation of the device. Those concerns received little attention in the Oregon and Washington State decisions above.

Judge Joseph Calabrese quoted Federal Circuit Judge Kleinfeld's concurrence in *McIver*, writing:

People care about their cars, planes and boats, and often object vehemently to any uncontested . . . mechanical work or even touching of these valuable effects In the absence of a warrant or applicability of an exception to the Fourth Amendment . . . people are entitled to keep police officers' hands and tools off their vehicles.²²²

Calabrese himself wrote, "Although . . . persons have diminished expectations of privacy in automobiles on public roads and can be tracked by the police, . . . the mere act of parking a vehicle on a public street does not give law enforcement the unfettered right to tamper with the vehicle by . . . attaching a tracking device"²²³

Ironically, the same property rights concerns Calabrese cited in creating the new warrant requirement undid the defendant's claim of unreasonable search and seizure: since he did not own the car to which the GPS devices were attached, the court ruled that Lacey lacked standing to

²¹⁸ *Id.* at 223.

²¹⁹ *People v. Lacey*, No. 2463N/02, slip op. at 8 (N.Y. Nassau County Ct. May 6, 2004), available at http://www.courts.state.ny.us/reporter/3dseries/2004/2004_50358.htm.

²²⁰ *Id.* at 1.

²²¹ *Id.* at 7.

²²² *Id.* at 6 (quoting *United States v. McIver*, 186 F.3d 1119, 1133 (9th Cir. 1999) (Kleinfeld, J., concurring in result and dissenting in analysis)). The federal district court which issued the *Moran* ruling strongly criticized this decision, nothing that "despite surveying cases from other jurisdictions on the issue, the *Lacey* Court failed to reconcile its reasoning with that of the United States Supreme Court in *Knotts*. In fact, the *Lacey* court did not even mention *Knotts*." *United States v. Moran*, 349 F. Supp. 2d 425, 467 (N.D.N.Y. 2005).

²²³ *Id.* at 8.

challenge their deployment and the role they played in his arrest.²²⁴ The evidence obtained through GPS tracking remained available to prosecutors.

IV. ARGUMENT

A. CONCEPTUAL BACKGROUND

This Comment argues that on a purely *legal* basis, current federal jurisprudence should not find that GPS surveillance of vehicles in public intrudes upon a reasonable expectation of privacy. Secondly, it provides additional, *policy*-based reasons why the law should embrace GPS.

Two basic sides exist in the debate over GPS. The first, argued here, begins its analysis with the nature of the information gathered through GPS tracking. Since that information is already public, there is no search or seizure for purposes of federal law.

The opposing argument begins at a different intellectual starting point. As explained by Doug Klunder, ACLU of Washington Privacy Project Director,²²⁵ rather than focusing on whether the information gathered is public or private, this side considers the *mere fact* that a government agency *collected* information about a person to be constitutionally significant.²²⁶ Legally, then, the Supreme Court “got it wrong” in *Knotts*.²²⁷

The major issue from this perspective, then, is the *collection* of information, rather than the *public character* of that data. Given that outlook, the efficiency a technology delivers in collecting information is legally significant since that efficiency accelerates and/or enlarges the scope of constitutionally-offensive behavior.²²⁸ According to this side, *how* information is gathered is just as important as *what* information is obtained.²²⁹

The two sides, then, do not so much argue *against* each other as they do *past* each other since they begin at different starting points and follow

²²⁴ *Id.* at 10.

²²⁵ Klunder wrote the ACLU’s amicus brief cited by the Washington Supreme Court in its *State v. Jackson* ruling. *See State v. Jackson*, 76 P.3d 217, 223 (Wash. 2003).

²²⁶ Telephone Interview with Doug Klunder, Privacy Project Dir., ACLU of Wash., in Seattle, Wash. (Feb. 6, 2005).

²²⁷ *Id.*

²²⁸ *Id.*

²²⁹ *See* Telephone Interview with Doug Klunder, Privacy Project Dir., ACLU of Wash., in Seattle, Wash. (Oct. 10, 2005). Along those lines, Klunder himself adopts the *Berry* court’s approach to GPS, arguing that the technology’s recording capability makes it legally distinct from beepers. *Id.* “Since the GPS devices record travel, they do not fall within the sensory enhancements argument—no enhancement of human senses allows us to ‘see’ into the past.” *Id.* This approach, however, lacks support in federal law. *See supra* note 125.

fundamentally separate paths in building their positions. Opponents of warrantless tracking essentially concede the legal status quo for purposes of federal law, but argue “that’s not how it should be.” To the extent they argue in favor of greater limitations within the current regime, they do so on policy grounds rather than legal ones. Advocates on both sides must remain aware of this dynamic to best comprehend and argue this issue.

B. ARGUMENTS AGAINST WARRANT REQUIREMENTS

Several powerful arguments favor treating GPS like any other sense-enhancing technology currently available to police for use without federal warrants.

1. *Legal Arguments*

First, in legal terms, the information gathered through GPS is already publicly observable by either lay persons or police officers. At its core, GPS is “just a high-tech version of conventional police surveillance.”²³⁰ Says one police commissioner, “[i]t’s tantamount to a cop following someone around. There is no listening device, no camera.”²³¹

As mentioned above, federal law recognizes no expectation of privacy in what one voluntarily exposes to the public.²³² All of the “associational” information the Washington Supreme Court mentioned in justifying its *State v. Jackson* ruling is, for purposes of federal law, legitimately available to police—or even random civilians—without a warrant, albeit through more cumbersome, low-tech means. We may be uncomfortable with the idea of scrutiny of our public movements, but we have no expectation of privacy in these movements under well-settled federal law.

Deputy Prosecuting Attorney Kevin Korsmo, who argued the State’s case in *State v. Jackson*, described the Washington Supreme Court’s ruling on GPS surveillance as “a visceral reaction to Big Brother.”²³³ He asked, “Why is it private because we didn’t have cops following [suspect Jackson] on the street?”²³⁴ Ironically, Korsmo said, private citizens in Washington are not subject to the same restrictions the Washington Court established for

²³⁰ Robin Topping, *GPS Decision Starts Privacy Debate Anew*, *NEWSDAY*, May 20, 2004, at A17.

²³¹ *Id.*

²³² See discussion *supra* Part III.A.

²³³ Telephone Interview with Kevin Korsmo, Deputy Prosecuting Attorney, Spokane County Prosecutor’s Office, in Spokane, Wash. (Feb. 7, 2005).

²³⁴ *Id.*

police.²³⁵ “What if a private citizen tracks another with GPS and then turns the information over to police?” he asked.²³⁶

Second, GPS does not defeat legitimate expectations of privacy by intruding *into* protected spaces. GPS trackers are usually placed on the *exterior* of a car, a space which federal courts grant little, if any protection.²³⁷ They do not penetrate the passenger cab and thereby intercept or record communications, as would listening devices. Since they are not “effective surrogate[s] for physical entry” into that space,²³⁸ they do not defeat a legitimate expectation of personal secrecy.²³⁹ GPS instead records *movement*—vehicle location—observable in public. Since GPS does not violate a legitimate expectation of privacy, it does not “search.”

Moreover, when battery-powered trackers are installed on the outside of a vehicle without wiring them into the vehicle, the devices’ operation does not impinge on the property interests of affected car owners by penetrating the vehicle. Such models do not meaningfully interfere with such interests beyond a *de minimis* level, and hence do not “seize.”²⁴⁰

Third, GPS is already widely available in the motor vehicle context and may well become ubiquitous in the foreseeable future.²⁴¹ The legal precedents cited above, especially *Kyllo*, suggest the public’s easy access to the technology will significantly reduce federal courts’ concerns over its use by police.²⁴²

2. Policy Arguments

Several policy arguments augment this legal approach. First, from an evidentiary perspective, GPS provides the exact sort of data the law should embrace. Technology-based information is less likely to be distorted than is evidence based on human perception. Consider the value of DNA in exonerating wrongly-accused rape suspects and death row inmates²⁴³ or the

²³⁵ *Id.*

²³⁶ *Id.*

²³⁷ See discussion *supra* Part III.A.3. This argument assumes that the GPS device in question is battery-powered, rather than the ones considered in *State v. Jackson* and *People v. Lacey*. Those devices generated their electrical power through wires which connected the device to the car in question.

²³⁸ Brief for National Association of Criminal Defense Lawyers et al. as Amici Curiae Supporting Petitioners, *Kyllo v. United States*, 530 U.S. 1305 (2000) (No. 99-8508).

²³⁹ *Id.* at 17.

²⁴⁰ See discussion *supra* Parts III.A.1, III.A.3.

²⁴¹ See discussion *supra* Part III.D.

²⁴² See discussion *supra* Part III.C.

²⁴³ Samuel R. Gross et al., *Exonerations in the United States, 1989 Through 2003*, 95 J. CRIM. L. & CRIMINOLOGY 523 (2005); see also Death Penalty Information Center,

role video surveillance plays in public corruption and drug investigations. “Like a DNA readout, GPS evidence does not take sides.”²⁴⁴ In *State v. Jackson*, had police followed suspect Jackson to the victim’s grave without using GPS, the discovery would have been a matter of “he said, she said” at trial, said prosecutor Korsmo.²⁴⁵ Instead, the GPS data provided a neutral—and therefore, credible—method of gathering vital evidence.²⁴⁶

Even if a GPS track is not

admissible as primary evidence, it can lead to valuable secondary evidence. Tracks may jog a witness’ memory, give clues to a witness’ location at a certain time, or lead to other evidence that confirms the track technology If the GPS track indicates passing . . . [a video surveillance camera] in the critical time period, the videotapes’ chronological reference may confirm the track chronology, and thus confirm an alibi or crime.²⁴⁷

The law should embrace those technologies which produce or, as here, engender more accurate fact finding, perhaps through interaction with other forms of evidence.

Second, GPS enhances officer safety. Because officers using GPS trackers need not actually follow a target vehicle, they do not risk being “made,” or discovered by a suspect. As James Mesis, Editor-in-Chief of *PI Magazine*, explained, a suspect involved in wrongdoing could discover a tailing officer.²⁴⁸ Unaware of why they were being tailed, the suspect might drive to a location where the officer could suddenly find himself “at the end of a barrel.”²⁴⁹ GPS eliminates the risk of such situations because it enables police to monitor suspects from an office computer.²⁵⁰

Third, GPS enhances police investigative efficiency, something critical for federal officers who bear primary responsibility for homeland security in the post-9/11 era.

<http://www.deathpenaltyinfo.org> (last visited Oct. 10, 2005); The Innocence Project, <http://www.innocenceproject.org> (last visited Oct. 10, 2005).

²⁴⁴ Schumann, *supra* note 24, at 10–11.

²⁴⁵ Telephone Interview with Kevin Korsmo, *supra* note 233.

²⁴⁶ Schumann, *supra* note 243, at 10–11.

²⁴⁷ *Id.* For an example of how police use GPS in conjunction with other surveillance technologies, see *Whitehead v. State*, 574 S.E.2d 351, 354 (Ga. Ct. App. 2002).

²⁴⁸ Telephone Interview with James Mesis, Editor-in-Chief, *PI Magazine*, in Freehold, N.J. (Jan. 26, 2005). Mesis, a twenty-five-year veteran of the private investigation industry, teaches surveillance and investigation courses to both police and private investigators. See generally *PI Magazine*, <http://www.pimagazine.com> (last visited Oct. 2, 2005).

²⁴⁹ *Id.*

²⁵⁰ *Id.*

As mentioned *supra*, GPS devices cost between a few hundred dollars and perhaps \$2,500, plus the minimal costs of monitoring.²⁵¹ The U.S. national average cost of having a private investigator tail a suspect is \$60 to \$65 per hour.²⁵² In urban areas, a minimum of two investigators are needed to tail a target.²⁵³ Thus, a one-person, sixteen-hour tail would, on average, cost at least \$960. In urban areas, the same sixteen-hour tail would require two people and cost about \$1,920. Assuming police surveillance costs at least this much, these estimates demonstrate the financial economy of using GPS, particularly in investigations stretching over a period of weeks or months or which involve multiple targets. Moreover, to the extent an officer can rely on a GPS device to track a suspect's movements, he is free to work on other projects during the period of the surveillance.

An empirical study of the impact of the LoJack anti-theft system provides a related finding in terms of how vehicle tracking technologies enhance crime control. Among other things, the study found that the arrest rate for stolen vehicles equipped with the LoJack system was three times greater—30 percent versus 10 percent—for cars equipped with LoJack than for those without the product.²⁵⁴ In Los Angeles alone, LoJack resulted in the breakup of at least fifty-three “chop shops” where criminals disassemble stolen vehicles for resale of parts.²⁵⁵ Since most thieves are repeat offenders, arrests that lead to incarceration may also provide social benefits via reductions in victimizations while the criminal is imprisoned.²⁵⁶

The fact that GPS provides “substitute police officers” should thus be welcomed as an efficient means to boost the effectiveness of limited law enforcement resources. To the extent GPS serves as a “force multiplier” by enlarging the police capability within existing, limited budgets and by perhaps—as in *State v. Jackson*—increasing the speed at which law enforcement brings criminals to justice,²⁵⁷ it serves the thoroughly desirable end of fighting crime. As the Fifth Circuit explained, many modern technologies

intrude into areas of citizens' lives that were private in the day of the deerstalker and magnifying glass [But today, these technologies] are used and permitted to be

²⁵¹ See discussion *supra* Part II.A.2.

²⁵² Telephone Interview with James Mesis, *supra* note 247.

²⁵³ *Id.*

²⁵⁴ Ian Ayres & Steven D. Levitt, *Measuring Positive Externalities From Unobservable Victim Precaution: An Empirical Analysis of Lojack*, 113 Q.J. ECON. 43, 45 (1998).

²⁵⁵ *Id.*

²⁵⁶ *Id.*

²⁵⁷ See discussion *supra* Parts II.B, III.F.2.b.

used because society wants the police function to be efficient. They are needed to keep police protection abreast of criminal cunning and affordable to taxpayers.²⁵⁸

In the final analysis, "GPS saves lives, saves money, and saves a tremendous amount of wasted man hours."²⁵⁹

C. ARGUMENTS IN FAVOR OF LIMITATIONS

Three major arguments favor requiring warrants for GPS: property rights, the chilling "Big Brother" effects that government monitoring may have on civil society, and potential abuse by law enforcement. Ultimately, only the third withstands scrutiny.

First, a legal, property rights-based argument can be made against warrantless GPS use²⁶⁰ insofar as *installation* of GPS trackers intrudes upon one's property. This argument is based on the idea that the legal essence of property is the right to exclude.²⁶¹ However, for purposes of *federal* law, current constitutional jurisprudence provides insufficient support for this argument. In real terms, any "intrusion" by battery-powered GPS units is minimal since these devices attach to the target vehicle via magnets and do not interfere with the vehicle's mechanical functioning or the owner's dominion over it.²⁶² Per *Karo*, the technical trespass on the space occupied by a tracking device is "only marginally relevant" in considering whether a person's privacy has been infringed.²⁶³

Second, from a policy perspective, excessive government surveillance could exert a chilling "Big Brother" effect upon society. The Oregon and Washington State Supreme Courts found this concern critical in deciding the *Campbell* and *Jackson* cases. This concern prompted the American Bar Association to issue standards for electronic and physical surveillance. The standards "state at the outset that technologically-assisted . . . surveillance should be regulated not only when it diminishes privacy, but also when it

²⁵⁸ United States v. Michael, 645 F.2d. 252, 259 (5th Cir. 1981) (Brown, J., concurring).

²⁵⁹ Telephone Interview with James Mesis, *supra* note 247.

²⁶⁰ See *supra* Part III.F.2.c.

²⁶¹ See *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 435 (1982) ("The power to exclude has traditionally been considered one of the most treasured strands in an owner's bundle of property rights."); *Dairy Queen of Okla., Inc. v. Comm'r of Internal Revenue*, 250 F.2d 503, 506 (10th Cir. 1957) ("[T]he traditional test of ownership is the power to exclude others.").

²⁶² See *supra* Parts III.A.1, III.A.2. This argument is, however, persuasive when considering GPS units which are physically wired into a vehicle to draw electric power. In those cases, the mechanical manipulations involved are clearly more than de minimis, making the installation a seizure.

²⁶³ See *United States v. Karo*, 468 U.S. 705, 712-13 (1984).

diminishes 'freedom of speech, association and travel, and the openness of society.'"²⁶⁴

This approach assumes that surveillance necessarily chills social interaction. Presumably, people will fear, or otherwise be uncomfortable with being seen and/or heard by a government authority while in public. Consequently, they may choose to remain in seclusion and/or silence whenever possible. Recent, albeit anecdotal, evidence suggests otherwise.

The City of Chicago currently operates roughly 2,000 surveillance cameras to monitor public areas and plans to add 250 more units by 2006.²⁶⁵ The City is upgrading the system with a computer program which recognizes and alerts police camera monitors to suspicious behavior, such as setting down a package and walking away from it.²⁶⁶ "Dispatchers will be able to tilt or zoom the cameras, some of which magnify images up to 400 times, in order to watch suspicious people and follow them from one camera's range to another's."²⁶⁷ The city's upgraded network "will embrace cameras placed not only by the police department, but also by a variety of city agencies including the transit, housing and aviation authorities."²⁶⁸ Chicago Police say the cameras have been critical over the last eighteen months in reducing street-based drug dealing that leads to gang violence.²⁶⁹

Has the current system chilled social interaction? Ron Huberman, director of Chicago's Office of Emergency Management and Communication, says, "no". "The feedback we're getting is that people welcome this. It makes them feel safer."²⁷⁰ One community organizer who works in a high-crime neighborhood said the 2,000 cameras now in place have reduced crime and "were 'having an impact, no if's, and's or but's about it.'"²⁷¹

²⁶⁴ Martin Marcus & Christopher Slobogin, *ABA Sets Standards for Electronic and Physical Surveillance*, 18 CRIM. JUST. 5, 16 (2003).

²⁶⁵ Stephen Kinzer, *Chicago Moving to Smart Surveillance Cameras*, N.Y. TIMES, Sept. 21, 2004, at A16.

²⁶⁶ *Id.*; see also Hal Dardick, *City Will Keep Eyes Peeled Big Time*, CHI. TRIB., Feb. 11, 2005, § 2, at 1.

²⁶⁷ Kinzer, *supra* note 264.

²⁶⁸ *Id.*

²⁶⁹ David Heinzmann, *Smile, You're On Candid Cop Cam*, CHI. TRIB., Feb. 25, 2005, at A1.

²⁷⁰ Kinzer, *supra* note 264.

²⁷¹ *Id.* One review of the impact of surveillance cameras on crime in Europe said that "a fair conclusion is that well-positioned, sophisticated cameras, run by competent staff, might be able to reduce some types of street crime, particularly theft, by 10 to 25 percent in 'high crime' areas, compared to similar public areas that have no cameras, with only a small displacement effect." Christopher Slobogin, *Public Privacy: Camera Surveillance Of Public*

Authors Ian Ayres and Steven D. Levitt confirmed a similar effect through empirical analysis of the LoJack system on car theft.²⁷² Auto thefts per capita fell 17.4 percent in the four years after introduction of LoJack, compared to no change for non-LoJack cities.²⁷³ The authors estimated the marginal social benefit of installing LoJack to be fifteen times greater than the marginal social cost.²⁷⁴ “It is clear,” the authors wrote, “that LoJack affects criminal behavior, even at low penetration rates” within a particular locale.²⁷⁵

These results suggest the impact of surveillance in general—and vehicle tracking in particular—may be more dynamic and positive than critics assert. To the extent surveillance enhances public safety—either through efficient resolution of criminal cases²⁷⁶ or deterrence of criminals—it enhances the quality of life and may thereby *increase* social interaction among law-abiding citizens.

Finally, again from a policy perspective, some might argue that the failure to require warrants could lead to arbitrary and capricious use of GPS by police. As dissenting Nevada Supreme Court Justice Robert Rose noted in *Osburn*,

The automobile’s use is a necessity in most parts of Nevada, and placing a monitor on an individual’s vehicle effectively tracks that person’s every movement just as if the person had it on his or her person . . . I fear that in some instances, the monitor will be used to continually monitor individuals only because law enforcement considers them ‘dirty.’ In the future, innocent citizens, and perhaps elected officials or even a police officer’s girlfriend or boyfriend, will have their whereabouts continually monitored simply because someone in law enforcement decided to take such action. This gives too much authority to law enforcement and permits the police to use the vehicle monitor without any showing of necessity and without a limit on the duration of the personal intrusion.²⁷⁷

Rose’s observation regarding the basic necessity of a car illustrates the magnitude of many citizens’ vulnerability to abuse of GPS tracking. However, this valid concern can be met with limits short of warrant requirements. Police agencies can use internal regulations to prohibit the use of GPS trackers—or, for that matter, *any* taxpayer-funded police

Places And The Right To Anonymity, 72 MISS. L.J. 213, 231 (2002). “Although not based on controlled studies, statements by American police officials are consistent with this conclusion.” *Id.* at 231 n.86.

²⁷² Ayres & Levitt, *supra* note 253, at 53.

²⁷³ *Id.*

²⁷⁴ *Id.* at 75.

²⁷⁵ *Id.*

²⁷⁶ See *supra* Parts II.B, III.F.2.b.

²⁷⁷ *Osburn v. State*, 44 P.3d 523, 527-28 (Nev. 2002) (Rose, J., dissenting).

equipment—for non-law enforcement purposes. Such regulations could be easily justified as preventing misuse of public resources and can be enforced through administrative sanctions. Records of such sanctions would presumably be discoverable by defendants investigated by officers who were disciplined for such misconduct.

Similarly, the ABA's new guidelines do not include a new warrant requirement for the use of tracking devices such as GPS. "The Standards seek neither to expand nor contract those situations that require a warrant . . . under the Fourth Amendment."²⁷⁸ Instead, the Association's surveillance standards of non-private activity, such as driving in public, "generally require that the use of surveillance be reasonably likely to achieve a legitimate law enforcement objective"²⁷⁹ and that law enforcement officers articulate how the surveillance will achieve that objective.²⁸⁰

V. CONCLUSION

GPS is an exciting new technology with which law enforcement can boost its crime-fighting efficiency and improve the quality of evidence available to juries deliberating in criminal cases.

The existing regime of Fourth Amendment jurisprudence offers little support for the argument that GPS should be subject to heightened procedural restraints relative to its technological precursors. The Fourth Amendment's proscription against unreasonable search and seizure is confined to a highly limited set of spaces deemed legitimately private and provides only token protections for movement in public. Americans exist in a physical space, the vast majority of which allows government scrutiny and which is punctuated by smaller, highly limited sanctuaries deemed legitimately off-limits to government. Within this unbalanced context, cars are granted even less protection than other defined, scrutiny-free areas, particularly in terms of seizure law. Thus, while GPS is a new technology, it creates no new legal issues.

²⁷⁸ Marcus & Slobogin, *supra* note 263, at 14.

²⁷⁹ *Id.* at 16.

²⁸⁰ *Id.*

