

Journal of Criminal Law and Criminology

Volume 108 | Issue 1

Article 4

Winter 2018

The Fourth Amendment in the Age of Persistent Aerial Surveillance

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THE FOURTH AMENDMENT IN THE AGE OF PERSISTENT AERIAL SURVEILLANCE

JOHN PAVLETIC*

If Big Brother made movies, persistent aerial surveillance would be its masterpiece. Small airplanes are rigged with high-tech cameras that can continuously transmit real-time images to the ground. The aircraft is able to monitor an area of thirty square miles for ten hours at a time. This technology allows video analysts to zoom in and track the location of vehicles, and even people. It was originally designed for military use during the Iraq War, but since then, it has been adapted for civilian applications. In 2016, the Baltimore Police Department contracted with Persistent Surveillance Systems to carry out a trial run of aerial surveillance over the city. The public was not informed that they were being watched every day.

The Supreme Court has long held that aerial surveillance itself does not constitute a search for the purposes of the Fourth Amendment. The persistency of this new kind of reconnaissance changes the calculus. Specialized airplanes enable law enforcement agencies to survey sizable regions for hours on end. It is precisely this power that makes persistent aerial surveillance more like constant GPS monitoring, which the Court has already considered a search. These modes of long-term observation are intrusive and violate a reasonable expectation of privacy.

Police action must be analyzed over time as a collective sequence of steps, not just an individual instance. The aggregate search can qualify under the Fourth Amendment, even if the individual steps did not. This is because prolonged surveillance reveals privacies and intimate details of life that short-term surveillance does not. Repetition, indeed habit, are

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cornerstones of personality and identity. People may reasonably expect some form of surveillance. People may also expect those observations to remain disconnected and nondescript.

This technology presents intriguing opportunities for law enforcement departments, in the investigation of crime, the presentation of evidence at trial, deterrence and crime reduction, exonerating the wrongfully convicted, and even traffic management and highway control. These advantages are not enough—and will never be enough—to avoid the command of the Constitution. Over time, the public has become more accepting of the surveillance state. The Constitution remains a counter-majoritarian check on the government. Absent probable cause and a warrant, persistent aerial surveillance is an unreasonable search that violates the Fourth Amendment.

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INTRODUCTION

Aerial surveillance by police has existed for as long as humans have been able to fly, and the Supreme Court has had many occasions to address the constitutionality of this type of investigation.¹ This Note looks to the persistent aerial surveillance being deployed in Baltimore and explores whether persistent aerial surveillance is constitutional under the Court's

¹ See generally *Florida v. Riley*, 488 U.S. 445 (1989); *California v. Ciraolo*, 476 U.S. 207 (1986); *Dow Chem. Co. v. United States*, 476 U.S. 227 (1986).

prevailing Fourth Amendment² jurisprudence. The Court has found that aerial surveillance is not a search.³ Persistent aerial surveillance, however, is a search and therefore must be reasonable to be constitutionally permissible. This kind of surveillance differs in both amount and kind from preexisting practices. The emerging technology enables law enforcement to rewind and fast-forward video footage of a metropolitan area over the course of a day, giving them a look into the private lives and routines of ordinary citizens.⁴ Thus, there are significant differences in its capabilities and the resulting infringements on privacy rights.

It is unlikely that the persistent aerial surveillance in Baltimore is reasonable because, generally speaking, the Baltimore Police would need to have a warrant and probable cause that a crime is being committed before any evidence of the crime occurred.⁵ Indeed, one source indicates that the video analysts employed by the Baltimore Police do not always follow people or cars based on an inference that they are participating in a criminal act.⁶ And they do not look at the footage based on an anonymous tip.⁷ In short, without probable cause and a warrant, the police can search through the surveillance footage to spy on the citizens of Baltimore.

This Note addresses the constitutionality of persistent aerial surveillance in two major parts. The introduction presents the issue of whether this action constitutes a search and proposes that the persistence of aerial surveillance changes the calculus. Inevitably, lower courts will soon face this added element to the old topic of aerial surveillance. Part I establishes the factual scenario of persistent aerial surveillance in Baltimore. Part II contends that the constancy of persistent aerial surveillance makes this new technology more analogous to a GPS monitor than a security camera for Fourth

² U.S. CONST. amend. IV.

³ See, e.g., *Dow Chem. Co.*, 476 U.S. at 239.

⁴ Monte Reel, *Secret Cameras Record Baltimore's Every Move From Above*, BLOOMBERG BUSINESSWEEK (Aug. 23, 2016), <https://www.bloomberg.com/features/2016-baltimore-secret-surveillance/>.

⁵ Rachel M. Cohen, *How Cops Have Turned Baltimore into a Surveillance State*, VICE (Sept. 13, 2016), <http://www.vice.com/read/psurveillance-baltimore-police-cops-reform> (explaining that the lack of probable cause is apparent on its face because “while police secrecy is nothing new, the kind of dragnet surveillance that Baltimore has engaged in—where officers aren’t necessarily looking for one particular person, or conducting a specific investigation—raises serious political issues.”).

⁶ See Jay Stanley, *Persistent Aerial Surveillance: Do We Want To Go There, America?*, ACLU (Feb. 7, 2014, 10:32 AM), <https://www.aclu.org/blog/persistent-aerial-surveillance-do-we-want-go-there-america> (“He said their current policy was that they ‘only start from a reported crime,’ and that typically analysts working for his company will ‘put everything together’ overnight, and then present detectives with a detailed incident report.”).

⁷ See *id.*

Amendment purposes. The Note concludes that absent probable cause and a warrant, persistent aerial surveillance is unconstitutional because it violates the reasonable expectations of privacy of U.S. citizens, who do not expect the government to monitor them across cities for hours at a time.

I. THE FACTS: PERSISTENT AERIAL SURVEILLANCE IN BALTIMORE

During the Iraq War, if a roadside bomb exploded while a surveillance aircraft was in the air, “analysts could zoom in to the exact location of the explosion and rewind to the moment of detonation.”⁸ They could examine the footage to see if a vehicle had stopped there earlier to plant the explosive.⁹ They could follow that car backwards in time to see where it came from and if it stopped at any other locations prior to the bombing location.¹⁰ Additionally, analysts could “fast-forward” from the moment of detonation and determine where the driver went after planting the explosive.¹¹

While use of this technology is accepted in the military, in recent years, it has expanded into civilian life, implicating new constitutional concerns. One such case is in Baltimore, where the Baltimore Police Department (“BPD”) has been conducting a trial run of aerial surveillance over its city since January 2016.¹² The BPD contracted with Persistent Surveillance Systems (“PSS”), the company whose technology the military used in Iraq.¹³ PSS adapted the technology from military use to civilian surveillance, and the technology is able to monitor an area of thirty square miles.¹⁴

The “elevator pitch” for this technology is: “Google Earth with TiVo capability.”¹⁵ Small “Cessna” airplanes are equipped with multiple high-tech, wide-angle cameras that are able to continuously transmit real-time images to analysts on the ground.¹⁶ These airplanes can fly above the city for around ten hours a day.¹⁷ The footage they capture is archived and stored on hard drives, and police have the capability of retrieving it weeks, or months, later.¹⁸ The analysts are also ready to assist police in investigations

⁸ Reel, *supra* note 4.

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

as they unfold.¹⁹ Currently, the technology does not produce perfect images: individual cars can be made out, but not their make or model; pedestrians are just pixelated dots, with no way to discern their identity.²⁰ However, a timeline for every dot can be established by rewinding and fast-forwarding the footage.²¹

The public was not informed of this surveillance until August 2016 when major media outlets, starting with Bloomberg Businessweek, broke the story.²² A member of the Maryland House of Delegates stated that this should have been a multilateral decision and that the public has a right to know where, when, and how the surveillance is used.²³ The American Civil Liberties Union (“ACLU”) of Maryland also jumped into action, planning legislation that would stop the BPD from adopting new technology without input from the public.²⁴ ACLU attorney David Roch said, “These tools should not be acquired and deployed in secret . . . We are not a foreign enemy; this is not a battlefield. Secrecy simply has no place whatsoever in this entire discussion.”²⁵

Persistent aerial surveillance, unthinkable two decades ago, is emerging as the technology of tomorrow. The technology has evolved from the military context to commercial use.²⁶ In 2006, the Pentagon was in search of technology that would detect who was planting the roadside bombs that were killing American soldiers in Iraq.²⁷ As a result, Angel Fire was born: a wide-area, live-feed surveillance system that could scan an entire city.²⁸ Back in 2006, the system utilized an assembly of four to six commercially-available industrial imaging cameras.²⁹ The cameras were positioned at different angles on the bottom of a plane and synchronized to produce a “searchable, constantly updating photographic map.”³⁰

The cameras had limits to their abilities then, as they do now. For

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

²³ Kevin Rector & Ian Duncan, *State lawmakers, ACLU Consider Legislation to Regulate Police Surveillance*, THE BALTIMORE SUN (Sept. 3, 2016, 3:00 pm), <http://www.baltimoresun.com/news/maryland/politics/bs-md-police-surveillance-legislation-20160903-story.html>.

²⁴ *Id.*

²⁵ *Id.*

²⁶ Reel, *supra* note 4.

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

instance, the analysts could not tell an American soldier apart from an Iraqi civilian.³¹ But the point was not to recognize individual perpetrators; instead, it was to follow any car or person backward or forward in time.³² In 2007, the system was deployed in Fallujah and other important battlegrounds.³³ It was eventually upgraded to include weatherproof equipment and night vision.³⁴ Later, it was transformed into Blue Devil, which attached narrow-focus zoom lenses to the original wide-area cameras.³⁵ The technology has since been developed for commercial use; the number of cameras has been increased to twelve, and the assembly has been designed to be lighter and cheaper.³⁶

Since the terrorist attacks on September 11, 2001, the United States has seen a significant investment in video surveillance.³⁷ Both law enforcement and private businesses have invested in security camera systems.³⁸ There is some debate about whether the mere presence of cameras reduces crime rates.³⁹ But the fact remains: a majority of the American public supports their deployment.⁴⁰ In November 2015, a Washington Post poll found that of those surveyed, 14% wanted fewer cameras in public.⁴¹ In fact, 41% of respondents wanted more cameras.⁴²

But persistent aerial surveillance differs from other forms of aerial surveillance because of its ability to monitor vast areas for long periods of time. This obliterates the idea that a person's comings and goings are no one's business but their own. So, although this capability may be advantageous from a law enforcement vantage point, it raises significant Fourth Amendment concerns. The Supreme Court has addressed the issue of aerial surveillance on a number of occasions, and thus far, it has consistently

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

³⁷ Craig Timberg, *New Surveillance Technology Can Track Everyone in an Area for Several Hours at a Time*, WASH. POST (Feb. 5, 2014), https://www.washingtonpost.com/business/technology/new-surveillance-technology-can-track-everyone-in-an-area-for-several-hours-at-a-time/2014/02/05/82f1556e-876f-11e3-a5bd-844629433ba3_story.html.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *Government and Corporate Surveillance Draw Wide Concern*, WASH. POST (Dec. 22, 2013), https://www.washingtonpost.com/page/2010-2019/WashingtonPost/2013/12/21/National-Politics/Polling/release_282.xml?tid=a_inl.

concluded that it is not a search.⁴³ But those types of aerial surveillance did not have the spatial and temporal capabilities that PSS does. Furthermore, these capabilities are the elements that make PSS more intrusive in violating a person's expectation of privacy.

II. PERSISTENT AERIAL SURVEILLANCE IS AKIN TO GPS MONITORING AND CONSTITUTES A SEARCH

A person's reasonable expectation of privacy is determined by analyzing their individual expectation and what society acknowledges as reasonable.⁴⁴ The Court has applied this test to aerial surveillance cases before; however, persistent aerial surveillance is unlike any previous form evaluated. Instead, persistent aerial surveillance is more similar to the GPS-monitoring cases the Court has considered. The mosaic theory supports this argument because this activity should be analyzed collectively.⁴⁵ To be sure, persistent aerial surveillance presents many advantages to law enforcement. But potential technological benefits for law enforcement are never enough to evade the reach of the Constitution.

A. THE *KATZ* DOCTRINE INDICATES THAT THE MANNER OF THE SURVEILLANCE DOES NOT NECESSARILY DICTATE WHETHER A SEARCH OCCURRED

The Court crafted the legal test for what conduct constitutes a search under the Fourth Amendment in *Katz v. United States*.⁴⁶ This test replaced the trespass doctrine and shifted the focus away from the means of searching to the perspective of the person being searched.⁴⁷ The Court held that, regardless of location, a conversation is protected from unreasonable search and seizure if it is made with a "reasonable expectation of privacy."⁴⁸ The two-prong test, originally set out by Justice Harlan in his concurring opinion, is (1) whether the individual has "exhibited an actual (subjective) expectation of privacy" and (2) whether "the expectation be one that society is prepared to recognize as 'reasonable.'"⁴⁹

Determining reasonable expectation of privacy requires an analysis into what the individual expects and what society deems is reasonable to expect.

⁴³ See generally *Florida v. Riley*, 488 U.S. 445 (1989); *California v. Ciraolo*, 476 U.S. 207 (1986); *Dow Chem. Co. v. United States*, 476 U.S. 227 (1986).

⁴⁴ See *id.*

⁴⁵ See *infra* Section D.

⁴⁶ 389 U.S. 347, 351 (1967).

⁴⁷ *Id.* at 353.

⁴⁸ *Id.* at 360–61.

⁴⁹ *Id.* at 361.

At first glance, one might think that individuals take active steps every day to avoid nosy neighbors, curious police officers, or chatty coworkers. On the other hand, as public opinion regarding security cameras shows, many Americans are content with sacrificing their personal liberty in public spaces to maintain a greater security interest.⁵⁰ It is a hard balance to strike.⁵¹ But these same Americans are not equally satisfied with allowing their government to monitor their every move.⁵²

As of now, persistent surveillance can track individuals traveling from Point A to Point B to Point C. While many might not consider this to be invasive, it is unclear what happens when the technology develops to the point where it can make out particular details about cars and people.⁵³ Nobody knows what happens when the police are able to spy on people within the confines of their own homes or workplaces. If you pair sophisticated telephoto lenses with infrared technology, these notions do not seem that far-fetched. Even though these may be interesting hypotheticals to ponder, the Court has “never held that potential, as opposed to actual, invasions of privacy constitute searches for purposes of the Fourth Amendment.”⁵⁴ At the same time, Justice Scalia took the “long view” in *Kyllo* and—writing for the Court—stated that “the rule we adopt must take account of more sophisticated systems that are already in use or in development.”⁵⁵

In response to concerns about “big brother,” PSS analysts explain they only zoom in on the photographic map in response to a police request, either during a rapidly unfolding situation like a homicide or violent assault, or to assist in an investigation of a burglary or hit-and-run from a day earlier.⁵⁶ But that statement necessarily means that the surveillance staff is monitoring

⁵⁰ See Timberg, *supra* note 37.

⁵¹ See generally Cohen, *supra* note 5 (“You need to balance some legitimate police needs with the idea that police may just have too much information on innocent people Police can go as far as they want, but what do communities want?”) (internal quotation marks omitted).

⁵² See Stanley, *supra* note 6 (opining that persistent aerial surveillance “does exactly what everyone has feared drones would do,” and “drones have provoked huge opposition and concern across the country”).

⁵³ Matthew Feeney, *Beware Police Drones*, HUFFINGTON POST (Dec. 1, 2016, 4:15 PM), http://www.huffingtonpost.com/entry/beware-police-drones_us_58408b08e4b09e21702da54f (“Military drone surveillance technology currently exists that allows users to see six-inch details in an area the size of a small city. While presently too expensive for many law enforcement agencies, we shouldn’t be in any doubt that when this technology is affordable police would seize on the opportunity to put it to use.”).

⁵⁴ *United States v. Karo*, 468 U.S. 705, 712 (1984).

⁵⁵ *Kyllo v. United States*, 533 U.S. 27, 36 (2001).

⁵⁶ Reel, *supra* note 4.

the live feed, at times, not only without a warrant, but also without probable cause. An exception for exigent circumstances may be applicable in some situations, but most exigencies would fall under the scenarios previously described.

To ease anxieties, PSS also claims that every action that its support staff takes is “logged and saved” in the system.⁵⁷ Because analysts are capable of—and do in fact—zoom in and search through these photographic maps, this still represents the kind of unbridled discretion seen in the era of general warrants.⁵⁸ Storing pictures of people’s backyards, decks, porches, and garages—even temporarily—is problematic. These practices do not make a difference in the analysis under *Katz*.⁵⁹ Under the Court’s current jurisprudence and the common law, society has recognized objectively reasonable expectations of privacy in their home and curtilage and in the location tracking of their vehicle.⁶⁰ It should not make a difference in the constitutional analysis that law enforcement departments, and their agents, can be held accountable for their behavior post hoc. This does not cure an ongoing constitutional violation. For example, just because the body camera on a police officer captures his excessive use of force on a civilian,⁶¹ that does not make his prior actions any more constitutional. There is just better evidence of it now. The question is: does the conduct of the officer violate the Constitution? A record is not a remedy in and of itself.

B. PERSISTENT AERIAL SURVEILLANCE IS NOT LIKE THE AERIAL SURVEILLANCE THAT THE COURT HAS PREVIOUSLY CONSIDERED

The Court has consistently held that the Fourth Amendment does not protect open fields.⁶² Of course, an exception to this rule has been carved out for the area immediately surrounding a home, referred to as the “curtilage.”⁶³ Open fields, then, consist of those portions of a homeowner’s property that

⁵⁷ *Id.* For instance, keystrokes and addresses that are zoomed in on are registered and retained. *Id.*

⁵⁸ *See generally* *Lo-Ji Sales, Inc. v. New York*, 442 U.S. 319 (1979).

⁵⁹ *Katz v. United States*, 389 U.S. 347 (1967).

⁶⁰ *See generally id.* at 347; *United States v. Jones*, 565 U.S. 400 (2012); *United States v. Dunn*, 480 U.S. 294 (1987).

⁶¹ *See generally* Matthew Feeney, *Using Persistent Surveillance to Watch the Watchmen*, CATO INST. (Sept. 20, 2016, 2:35 PM), <https://www.cato.org/blog/using-persistent-surveillance-watch-watchmen> (discussing the positive effect body cameras can have with the right policies in place).

⁶² *See* *Oliver v. United States*, 466 U.S. 170, 173 (1984) (citing to *Hester v. United States*, 265 U.S. 57 (1924)).

⁶³ *See Dunn*, 480 U.S. at 296.

extend beyond the house and curtilage.⁶⁴ Beyond that, the Court has maintained that society has recognized no objectively reasonable expectation of privacy in open fields.⁶⁵ This is true of a pre- and post-*Katz* world. For instance, in *Oliver*, police officers were investigating a tip that the defendant was growing marijuana on his property.⁶⁶ They drove onto his land, past his house, and up to a gate which displayed a “[n]o trespassing” sign.⁶⁷ The officers exited their vehicle and walked along a path around the gate into his property for about a mile, until they spotted a large marijuana plant on the property.⁶⁸ Relying on the open fields doctrine, the Court held that the officers’ actions did not constitute a search under the Fourth Amendment.⁶⁹ Specifically, the Court reasoned that both “the public and police lawfully may survey lands from the air.”⁷⁰ This was one of the overriding justifications for the rule, and it necessitates the constitutionality of aerial surveillance. If police can infiltrate open fields on the ground, then surely they can surveil them from the air.⁷¹

Furthermore, the Court has reiterated that it will not require law enforcement to remain in the Stone Age.⁷² This means that police are permitted to substitute aerial surveillance when the same action would be perfectly lawful on the ground.⁷³ The third-party doctrine presupposes that if an individual knowingly exposes something to the public, they forego their privacy interest in this data.⁷⁴ Therefore, the public nature of these acts supports this form of technological monitoring. This is essentially what the Court decided in *Dow Chemical Co.*, when government inspectors did not obtain a warrant before conducting aerial surveillance of outdoor business facilities.⁷⁵ The Court analogized the open areas of an industrial complex to

⁶⁴ *Id.* at 300.

⁶⁵ *See Katz*, 389 U.S. at 347.

⁶⁶ *Oliver*, 466 U.S. at 173.

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *Id.* at 181.

⁷⁰ *Id.* at 179.

⁷¹ *Dow Chem. Co. v. United States*, 476 U.S. 227, 250–51 (1986) (“Open fields, as we held in *Oliver*, are places in which people do not enjoy reasonable expectations of privacy and therefore are open to warrantless inspections from ground and air alike.”) (citing *Oliver*, 466 U.S. at 180–81).

⁷² *See, e.g., United States v. Knotts*, 460 U.S. 276, 282–84 (1983) (“Nothing in the Fourth Amendment prohibited the police from augmenting the sensory faculties bestowed upon them at birth with such enhancement as science and technology afforded them in this case.”).

⁷³ *See Dow Chemical Co.*, 476 U.S. at 250–51.

⁷⁴ *See, e.g., Smith v. Maryland*, 442 U.S. 735, 744–45 (1979) (explaining the third-party doctrine).

⁷⁵ *Dow Chem. Co.*, 476 U.S. at 229.

open fields, and thus held that there was no objectively reasonable expectation of privacy in the area.⁷⁶

On top of the open fields analysis, the Court also addressed the use of powerful, expensive photographic technology from the sky above.⁷⁷ The majority and dissent disputed the actual sophistication of the technology, but importantly, both found it relevant.⁷⁸ The majority characterized the photographs as those used in “mapmaking,” and wrote that “[a]ny person with an airplane and an aerial camera could readily duplicate them.”⁷⁹ But the dissent suggested that the camera had the “capability to reveal minute details of Dow’s confidential technology and equipment.”⁸⁰ The dissent also stated that civilians are not “likely to purchase \$22,000 cameras,”⁸¹ which in the dissent’s view, necessarily affected whether society recognized that expectation of privacy as objectively reasonable.

Indeed, in that case, the Government conceded “that surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally proscribed absent a warrant.”⁸² Even if the pictures reveal more than the naked-eye, what’s important is whether “intimate details” are revealed.⁸³ In *Dow Chemical Co.*, the observation was limited to “an outline of the facility’s buildings and equipment.”⁸⁴

The dissent additionally asserted that “*Katz* measures Fourth Amendment rights by reference to the privacy interests that a free society recognizes as reasonable, not by reference to the method of surveillance used in the particular case.”⁸⁵ Just because the world becomes more technological and civilians have access to incredible tools, does not make it any more constitutional for the government to use those devices against them. These wide range cameras—when used for long periods of time—are likely exactly what the Court alluded to in *Dow Chemical Co.* The technology has the

⁷⁶ *Id.* at 239.

⁷⁷ *Id.* at 238.

⁷⁸ *Id.* at 238, 251, 251 n.13.

⁷⁹ *Id.* at 231.

⁸⁰ *Id.* at 251 n.13.

⁸¹ *Id.* at 251 n.13.

⁸² *Id.* at 238.

⁸³ *Id.*; see also *Kyllo v. United States*, 533 U.S. 27, 37 (2001) (“*Dow Chemical*, however, involved enhanced aerial photography of an industrial complex, which does not share the Fourth Amendment sanctity of the home . . . In the home, our cases show, *all* details are intimate details, because the entire area is held safe from prying government eyes.”) (emphasis in original).

⁸⁴ *Dow Chem. Co.*, 476 U.S. at 238.

⁸⁵ *Id.* at 251.

ability to track you at all times within your community, meaning it has the potential to trace the very intimate details of your life.

As previously mentioned, the Court has addressed the issue of aerial surveillance in the context of the Fourth Amendment a number of times and has held that aerial observation is not considered a search under the Constitution.⁸⁶ Take *California v. Ciraolo*, where the defendant grew marijuana plants in his backyard, enclosed from view by fencing.⁸⁷ Acting on an anonymous tip, the police department sent officers in a private plane over the property to photograph it at an altitude of 1,000 feet.⁸⁸ Based on the naked eye observations of an officer, a search warrant was granted to enter the rest of the property on foot.⁸⁹

The Court held that what is exposed, and then observed, by the naked eye is not a search.⁹⁰ The Court reasoned that the officers investigated from a legal, public vantage point that was physically nonintrusive.⁹¹ However, the dissent did point out that “[r]eliance on the manner of surveillance is directly contrary to the standard of *Katz*.”⁹² As a result, the manner in which one obtains the vantage point is not hugely significant. The fact that planes are taking pictures should not cabin this new technology into the Court’s pre-existing interpretation of aerial surveillance. The correct question is “whether society is prepared to recognize an asserted privacy interest as reasonable.”⁹³

Also instructive is *Florida v. Riley*.⁹⁴ In that case, the sheriff’s office received a tip that the defendant was growing marijuana on his rural property.⁹⁵ Law enforcement surveilled the property using a helicopter, and with their naked eyes, they were able to see marijuana growing through a gap in the roofing of a greenhouse.⁹⁶ The Court held that these observations were not a search.⁹⁷ The Court explained that a private citizen could have legally flown in the same airspace, recognizing that they were not crafting a per se

⁸⁶ *Florida v. Riley*, 488 U.S. 445, 445 (1989); *California v. Ciraolo*, 476 U.S. 207, 207 (1986); *Dow Chem. Co.*, 476 U.S. at 227.

⁸⁷ *Ciraolo*, 476 U.S. at 209.

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Id.* at 215.

⁹¹ *Id.* at 213.

⁹² *Id.* at 223 (emphasis omitted).

⁹³ *Id.* at 223.

⁹⁴ 488 U.S. 445, 445 (1989).

⁹⁵ *Id.* at 448.

⁹⁶ *Id.*

⁹⁷ *Id.* at 452.

rule on all aerial surveillance.⁹⁸ In addition, the helicopter did not interfere with the normal use of the property and did not intrude into the more intimate areas of the home and curtilage.⁹⁹ In a persuasive concurrence, Justice O'Connor opined that the frequency of public flight in the particular air space is a necessary concern in the analysis.¹⁰⁰ Further, the mere legality of such flights is insufficient for reasonable expectation of privacy purposes.¹⁰¹

Persistent aerial surveillance is unlike what the Court has previously contemplated in cases like *Ciraolo* and *Riley*.¹⁰² In the past, the Court has expressed no concern when a civilian had the capability of observing the criminal activity with a passing glance.¹⁰³ But this is no passing glance. On the one hand, it is true that the PSS cameras do not currently possess the capability of recognizing individuals, and of course, there are plenty of security cameras on the ground that can do this.¹⁰⁴ Like that equipment, aerial surveillance could potentially pose no problem under the Fourth Amendment.¹⁰⁵ But the difference is in the ability to incessantly monitor a person throughout their day. Again, the manner in which law enforcement chooses to surveil has lost constitutional relevancy over time.¹⁰⁶ The real question is: whether society is—or is not—prepared to recognize a privacy to travel without being tracked as reasonable.¹⁰⁷

In *Riley*, the Court necessarily implied that if private citizens cannot fly in the same airspace as law enforcement, then that may pose a constitutional

⁹⁸ *Id.* at 451 (“This is not to say that an inspection of the curtilage of a house from an aircraft will always pass muster under the Fourth Amendment simply because the plane is within the navigable airspace specified by law.”).

⁹⁹ *Id.* at 452.

¹⁰⁰ *Id.* at 454–55.

¹⁰¹ *Id.*

¹⁰² *California v. Ciraolo*, 476 U.S. 207, 209 (1986); *Riley*, 488 U.S. at 445.

¹⁰³ *Id.*

¹⁰⁴ On the ground, security cameras are visible, and the public has notice of their presence. Additionally, there is a difference between one camera taping you doing something one time, and the government having a record of you every time you walk out of your home.

¹⁰⁵ *But see* Jon Schuppe, *New Baltimore Aerial Surveillance Program Raises Trust Issues*, NBC NEWS (Aug. 29, 2016, 9:33 AM), <http://www.nbcnews.com/news/us-news/new-baltimore-aerial-surveillance-program-raises-trust-issues-n638496> (“The images are not sharp enough to make out details, but they have been used to link with street-level surveillance cameras to identify suspects, Baltimore officials say.”).

¹⁰⁶ *See Ciraolo*, 476 U.S. at 223 (Powell, J., dissenting) (“Reliance on the manner of surveillance is directly contrary to the standard of *Katz*, which identifies a constitutionally protected privacy right by focusing on the interests of the individual and of a free society.”) (emphasis in original).

¹⁰⁷ *See* Monte Reel, *Police Spy Tools Evolve Faster Than Lawmakers Can Keep Up: Baltimore's Aerial Surveillance Continues Unchecked*, BLOOMBERG BUSINESSWEEK (Dec. 8, 2016), <https://www.bloomberg.com/features/2016-baltimore-surveillance-project/>.

issue.¹⁰⁸ Now, of course, many civilians are pilots who operate their own aircrafts and share the same sky with commercial and governmental planes. And private aircrafts are in fact able to circle the same thirty-mile radius for ten hours straight in order to take pictures of their city, or for that matter, any other purpose.¹⁰⁹ But as Justice O'Connor noted in her concurrence, the general public does not partake in such activity.¹¹⁰ And just because the observation flights may be legal does not change the fact that society does not expect them to occur.¹¹¹ Although the cameras used by PSS may be commercially available, that does not mean they are in public use. As the photographic lenses continue to grow in power, the privacy costs will rise.¹¹² PSS analysts say that they will widen their viewing area, as opposed to increasing the magnification of the cameras.¹¹³ But if the Constitution does not offer protection, then people will be left to “the mercy of advancing technology—including imaging technology that could discern all human activity in the home.”¹¹⁴

C. PERSISTENT AERIAL SURVEILLANCE IS LIKE GPS MONITORING

In regard to the Fourth Amendment, persistent aerial surveillance is similar to Global Positioning System (“GPS”) monitoring because both surveillance devices allow law enforcement to monitor the movements of cars (and persons) as they transcend through the public and private spheres of their lives. To illustrate, in *United States v. Jones*, a GPS device was installed on Jones’s automobile without a valid warrant.¹¹⁵ The device tracked the vehicle’s movements twenty-four hours a day over the course of a month.¹¹⁶ The Court held that this police action did constitute a search, but the justices were split as to whether it did so under a common law trespassory

¹⁰⁸ See *Florida v. Riley*, 488 U.S. 445, 451 (1989).

¹⁰⁹ See Kevin Rector, *As police weigh surveillance program, private company at helm looks to court private clients*, BALTIMORE SUN, (Oct. 7, 2016, 6:56 PM), <http://www.baltimoresun.com/news/maryland/baltimore-city/bs-md-ci-surveillance-alternatives-20161007-story.html> (“The FAA does not regulate the length of time that an aircraft can overfly an area or the purpose of a flight, the agency said in a statement.”) (internal quotations omitted).

¹¹⁰ *Florida v. Riley*, 488 U.S. 445, 455 (1989) (O’Connor, J., concurring).

¹¹¹ *Id.* at 454–55.

¹¹² See Reel, *supra* note 107 (“It is inevitable that if this is allowed to happen, the cameras will be put on drones . . . And it is absolutely inevitable that the camera resolution is only going to be going up, the cost of the cameras will be going down, and what the cameras will see will only become more detailed.”) (internal quotations omitted).

¹¹³ Reel, *supra* note 4.

¹¹⁴ *Kyllo v. United States*, 533 U.S. 27, 35–36 (2001).

¹¹⁵ 565 U.S. 400, 402–03 (2012).

¹¹⁶ *Id.*

test or the *Katz* reasonable expectation of privacy test.¹¹⁷ Justice Alito concurred in the opinion, stating that although short-term monitoring may be constitutionally permissible, “the use of longer term GPS monitoring in investigations of most offenses impinges on expectations of privacy.”¹¹⁸ For Justice Alito, the distinguishing factor of this method of surveillance was the duration, which was significant because of what that revealed about an individual’s routine.¹¹⁹ GPS monitoring gives context to surveillance that is otherwise missing from most investigations.

Justice Sotomayor also concurred in the opinion, and she argued that GPS surveillance in general reveals completely private destinations, like “trips to the psychiatrist, the plastic surgeon, the abortion clinic, the AIDS treatment center, the strip club, the criminal defense attorney, the by-the-hour motel, the union meeting, the mosque, synagogue or church, the gay bar and on and on.”¹²⁰ Justice Alito also made clear that, at least in his mind, the Court’s prior decision in *Knotts* was distinguishable because there, the monitoring of every movement was not for twenty-four hours.¹²¹ The police discretely used the device over a matter of hours.¹²² In fact, the *Knotts* Court specifically contemplated the fact that different principles might apply to constant tracking of a day or more.¹²³

In *Jones*, the concurring justices refused to draw a line on how long it would take to transform the event of following a car home into a wild-goose chase into the private lives of ordinary Americans.¹²⁴ Persistent aerial surveillance falls somewhere in this grey area. Currently, the planes that carry the cameras can fly above a city for around ten hours.¹²⁵ The temporal limitations the Constitution places on the surveillance are unclear at best. Eventually, this turns into a proverbial chip being implanted into United States citizens. And the effect this could have on a free and open society is frightening. As Justice Sotomayor stated in *Jones*: “[a]wareness that the government may be watching chills associational and expressive freedoms.”¹²⁶ People will be less likely to go their place of worship, their

¹¹⁷ *Id.* at 404–11.

¹¹⁸ *See id.* at 430 (Alito, J., concurring).

¹¹⁹ *Id.*

¹²⁰ *Id.* at 415 (Sotomayor, J., concurring) (internal citation omitted); *see also* Rector & Duncan, *supra* note 23.

¹²¹ *See Jones*, 565 U.S. at 430 (Alito, J., concurring); *United States v. Knotts*, 460 U.S. 276, 279, 283 (1983).

¹²² *Id.* at 284.

¹²³ *Id.*

¹²⁴ *United States v. Jones*, 565 U.S. 400, 430 (2012).

¹²⁵ *See Reel*, *supra* note 4.

¹²⁶ *Jones*, 565 U.S. at 416 (Sotomayor, J., concurring); *see* Cohen, *supra* note 5.

healthcare provider, the casino, or the bar. The citizens of Baltimore may be too scared to leave their city, even their own homes.

Expanding on GPS monitoring, some companies store the photographic data they collect.¹²⁷ Raw footage of the photographic map is accessible on a hard drive.¹²⁸ This capacity presents interesting arguments that could favor the use of the technology. For example, police behavior and state action could be monitored and reviewed.¹²⁹ Squad cars and officers on foot could be tracked throughout the city. From this data, it could readily be discerned in what areas and neighborhoods officers spend most of their time, and how they respond to events as they transpire. This oversight would not only promote police efficiency but also accountability because it could ferret out law enforcement overreach and other abuses of power. Additionally, defendants could have access to the surveillance footage.¹³⁰ In some cases, these pictures could exonerate an accused by supporting an alibi that he was not at the crime scene when the fatal events took place. While these are obviously appealing possibilities, it does not alter the constitutional analysis of whether society recognizes an expectation of privacy as objectively reasonable. Furthermore, requiring the police to get a warrant to deploy the surveillance system does nothing to prevent the positive side effects laid out above from coming about. Moreover, getting a warrant today is not the chore or tax on resources that it used to be.¹³¹

The five-justice majority opinion in *Jones* was based on the common law physical trespass test.¹³² Because the installation of the monitoring device intruded onto the suspect's property, it was a warrantless search in violation of the Fourth Amendment.¹³³ But the majority never reached the

¹²⁷ See Kevin Rector, *Retention of Baltimore police surveillance footage breaks with company's standard 45-day policy*, BALT. SUN (Oct. 29, 2016, 2:30 PM), <http://www.baltimoresun.com/news/maryland/investigations/bs-md-sun-investigates-surveillance-retention-20161029-story.html> (“The retention policy is one of the critical questions with regard to any surveillance program because the longer data is retained, the greater the opportunities for misuse and for repurposing of the data into new uses that can harm people in new and expanded ways.”) (internal quotation omitted).

¹²⁸ See *id.*

¹²⁹ See, e.g., Reel, *supra* note 4.

¹³⁰ See *id.*

¹³¹ See *Riley v. California*, 134 S. Ct. 2473, 2493 (2014) (“Recent technological advances similar to those discussed here have, in addition, made the process of obtaining a warrant itself more efficient.”) (citing to *Missouri v. McNeely*, 133 S. Ct. 1552, 1573 (2013) (Roberts, C.J., concurring in part and dissenting in part) (noting that, for example, in one jurisdiction, “police officers can e-mail warrant requests to judges’ iPads [and] judges have signed such warrants and e-mailed them back to officers in less than 15 minutes.”)).

¹³² *United States v. Jones*, 565 U.S. 400, 410–11 (2012).

¹³³ *Id.* at 407.

question of whether long-term, continuous surveillance would infringe upon an objectively reasonable expectation of privacy.¹³⁴

D. THE MOSAIC THEORY SUPPORTS THIS CLASSIFICATION OF PERSISTENT AERIAL SURVEILLANCE AS GPS MONITORING

At this point, it might be helpful to zoom out a bit. Indeed, to properly understand the significance of the *Jones* opinion, one must start where the Justices did: contemplating the new legal theory the D.C. Circuit adopted in *United States v. Maynard*.¹³⁵ The concurrences in the Supreme Court's *Jones* decision demonstrate that five justices were persuaded by the "mosaic theory," a new way of cognizing the Fourth Amendment.¹³⁶ A commentator has discussed how the D.C. Circuit laid out their approach to searches in *Maynard*, explaining that they

can be analyzed as a collective sequence of steps rather than as individual steps. Identifying Fourth Amendment searches requires analyzing police actions over time as a collective 'mosaic' of surveillance; the mosaic can count as a collective Fourth Amendment search even though the individual steps taken in isolation do not.¹³⁷

The D.C. Circuit was analyzing the set of facts present in *Jones* that had to do with the persistent GPS monitoring of a vehicle.¹³⁸ The key issue is whether or not the circumstances have changed concerning what constitutes a search. Like many of life's looming questions, the answer was that time makes all the difference in the world:

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

¹³⁴ *See id.*

¹³⁵ 615 F.3d 544 (D.C. Cir. 2010).

¹³⁶ *Jones*, 565 U.S. at 409–19; *see also Maynard*, 615 F.3d at 561–62.

¹³⁷ Orin S. Kerr, *The Mosaic Theory of the Fourth Amendment*, 111 MICH. L. REV. 311, 313 (2012); *see also* Steven M. Bellovin et al., *When Enough Is Enough: Location Tracking, Mosaic Theory, and Machine Learning*, 8 NYU J. L. & LIBERTY 556, 557 (2014).

¹³⁸ *Maynard*, 615 F.3d at 544.

groups—and not just one such fact about a person, but all such facts.¹³⁹

This line of reasoning is what Justice Sotomayor picked up on when she spoke of the chilling effect that this type of surveillance could have on “associational and expressive freedoms.”¹⁴⁰ Indeed, the fear is that people will be less likely to go certain places knowing that the government is watching. The Constitution prevents this outcome.

In *Maynard*, the D.C. Circuit held that society was prepared to recognize this privacy interest as reasonable.¹⁴¹ They explained that “[a] reasonable person does not expect anyone to monitor and retain a record of every time he drives his car, including his origin, route, destination, and each place he stops and how long he stays there; rather, he expects each of those movements to remain disconnected and anonymous.”¹⁴² It is no answer that different First Amendment concerns are at play with movements and video recording than there are with speech. *Maynard*, standing in agreement with other cases, has explicitly recognized that this form of monitoring exposes those things people expect to be private.¹⁴³ Additionally, the fact that an individual might traverse between traditionally private and public spaces, while relevant, is not dispositive on the analysis, because “[a] person does not leave his privacy behind when he walks out his front door”¹⁴⁴

The concerns that the D.C. Circuit raised are not new to the bench. Since *Smith v. Maryland*, courts have been fearful of this idea of persistency in searching and the potential privacies it may reveal.¹⁴⁵ Furthermore, in the years both prior to and after the D.C. Circuit’s exposé on the theory (and the Supreme Court’s subsequent ruling in the case which left this particular issue for another day), several district courts and circuit courts have passed favorably on the matter.

In *United States v. Cuevas-Sanchez*, the Fifth Circuit said, in dicta, that the installment of a video surveillance camera on a power pole to monitor activities taking place in an individual’s backyard constituted a search.¹⁴⁶ In order to reach this conclusion, the court had to distinguish this case from

¹³⁹ *Id.* at 562.

¹⁴⁰ *Jones*, 565 U.S. at 416 (Sotomayor, J., concurring).

¹⁴¹ *See Maynard*, 615 F.3d at 563.

¹⁴² *Id.* (internal citations and quotations omitted).

¹⁴³ *See id.*

¹⁴⁴ *Id.*

¹⁴⁵ *See* 442 U.S. 735, 748 (1979) (Stewart, J., dissenting) (“This is not because such a list might in some sense be incriminating, but because it easily could reveal the identities of the persons and the places called, and thus reveal the most intimate details of a person’s life.”); *see also id.* at 751 (Marshall, J., dissenting).

¹⁴⁶ 821 F.2d 248, 251 (5th Cir. 1987).

other aerial surveillance cases and the *Ciraolo* rule.¹⁴⁷ In that case, the Supreme Court held that taking photographs from a plane flying 1,000 feet above the property was not a search.¹⁴⁸ But in *Cuevas-Sanchez*, the Fifth Circuit described a very different situation because of the constancy of the monitoring:

This type of surveillance provokes an immediate negative visceral reaction: indiscriminate video surveillance raises the spectre of the Orwellian state. Here, unlike in *Ciraolo*, the government's intrusion is not minimal. It is not a one-time overhead flight or a glance over the fence by a passer-by. Here the government placed a video camera that allowed them to record all activity in Cuevas's backyard. It does not follow that *Ciraolo* authorizes any type of surveillance whatever just because one type of minimally-intrusive aerial observation is possible.¹⁴⁹

So, although the defendant might have had no expectation to be free from a nosey neighbor or passerby, he did have an expectation that someone (or something) would not always have eyes on him.¹⁵⁰

The Ninth Circuit has also addressed persistent video surveillance. In *United States v. Nerber*, the court analyzed whether a video camera hidden in a hotel room was a search.¹⁵¹ Expounding on the issue, the court said:

Hidden video surveillance is one of the most intrusive investigative mechanisms available to law enforcement. The sweeping, indiscriminate manner in which video surveillance can intrude upon us, regardless of where we are, dictates that its use be approved only in limited circumstances. As we pointed out in *Taketa*, the defendant had a reasonable expectation to be free from hidden video surveillance because the video search was directed straight at him, rather than being a search of property he did not own or control. False and the silent, unblinking lens of the camera was intrusive in a way that no temporary search of the office could have been.¹⁵²

In this case, the court makes clear that the practice of singling out an individual and specifically targeting them, much like being able to zoom in on a moving vehicle or person using persistent aerial surveillance, is especially intrusive.¹⁵³ The court reasons this is primarily because it is not limited in scope, whether it be temporally (as in this case), spatially, or, as with persistent aerial surveillance, both.¹⁵⁴

The Sixth Circuit has not had occasion to reach a holding on the issue⁷

¹⁴⁷ *Id.*

¹⁴⁸ *California v. Ciraolo*, 476 U.S. 207, 215 (1986).

¹⁴⁹ *Cuevas-Sanchez*, 821 F.2d at 251.

¹⁵⁰ *See id.*

¹⁵¹ 222 F.3d 597, 605–06 (9th Cir. 2000).

¹⁵² *Id.* at 603 (internal citation omitted).

¹⁵³ *See id.*

¹⁵⁴ *See id.*

however, the circuit has taken the opportunity to discuss it in one of its more recent opinions.¹⁵⁵ Of note, the court took the time to distinguish *Ciraolo* much like its sister circuits have, indicating the main differentiating factor was the brief flyover there, as compared to the extended and constant surveillance in *Anderson-Bagshaw*.¹⁵⁶ And even though the court held that any constitutional violation would have been harmless, they still paused to state:

Nonetheless, we confess some misgivings about a rule that would allow the government to conduct long-term video surveillance of a person's backyard without a warrant. Few people, it seems, would expect that the government can constantly film their backyard for over three weeks using a secret camera that can pan and zoom and stream a live image to government agents.¹⁵⁷

Lastly, the court concluded by making the common observation that at least five justices of the Supreme Court share their concerns regarding long-term surveillance.¹⁵⁸

Long-term tracking can also be carried out using cell phone location information ("CSLI").¹⁵⁹ The Fourth Circuit has used the justifications of the mosaic theory to hold that the warrantless use of such technology was in violation of the Fourth Amendment.¹⁶⁰ Interestingly, the court discussed at length two variables that are highly relevant to surveillance cases: quantity and quality.¹⁶¹ As discussed *supra* in Section I, persistent aerial surveillance currently remains relatively limited in its capabilities.¹⁶² It can monitor a pixelated dot; however, it is just a dot on the screen.¹⁶³ The analysts are unable to determine the make or model of a vehicle, or the race or sex of a

¹⁵⁵ *United States v. Anderson-Bagshaw*, 509 F. App'x 396, 405 (6th Cir. 2012).

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

¹⁵⁹ *See United States v. Graham*, 824 F.3d 421, 447–48 (4th Cir. 2016). The case law in this area is in flux, as demonstrated by the Supreme Court's recent decision to grant certiorari in *Carpenter v. United States*, 819 F.3d 880 (6th Cir. 2016), *cert. granted*, 137 S. Ct. 2211 (2017); *see also* Orin Kerr, *Third Party Rights and the Carpenter Cell-Site Case*, WASH. POST: THE VOLOKH CONSPIRACY (June 15, 2017) https://www.washingtonpost.com/news/volokh-conspiracy/wp/2017/06/15/third-party-rights-and-the-carpenter-cell-site-case/?utm_term=.11adbe595307; Orin Kerr, *United States v. Wallace is a GPS Case, Not a Cell-Site Case — Here's Why It Matters*, WASH. POST: THE VOLOKH CONSPIRACY (May 24, 2017), https://www.washingtonpost.com/news/volokh-conspiracy/wp/2017/05/24/united-states-v-wallace-is-a-gps-case-not-a-cell-site-case-heres-why-it-matters/?utm_term=.c6cc53f7adaa (distinguishing GPS cases and cell-site cases).

¹⁶⁰ *Graham*, 824 F.3d at 447–48.

¹⁶¹ *Id.* at 447.

¹⁶² *See supra* Section I.

¹⁶³ Reel, *supra* note 4.

person.¹⁶⁴ But what they are able to do is follow an individual for at least ten hours a day over a thirty-mile radius.¹⁶⁵ And because the data is stored, analysts can stitch these photographic maps together over a long period of time.¹⁶⁶ This is not unlike the CSLI the Fourth Circuit addressed in *Graham*. And as a result, it is clear that at least one circuit is willing to consider, and potentially weigh more heavily, the factor of quantity.¹⁶⁷

The mosaic theory has also been considered at trial.¹⁶⁸ In a decision coming out of the Eastern District of Michigan, the judge considered persistent surveillance in a drug trafficking case.¹⁶⁹ The court held that the investigatory technique violated the individual's reasonable expectation of privacy.¹⁷⁰ The judge reasoned that "[t]he blanket surveillance of an individual for thirty days at a time cannot equate to a brief detention, however. The 'nature and quality' of an intrusion of that magnitude (in excess of the '4-week mark') tips the balance in favor of the individual"¹⁷¹

In *United States v. Vargas*, the Eastern District of Washington confronted the common pole camera situation.¹⁷² The surveillance was continuous, and it recorded activity in the defendant's front yard for more than six weeks.¹⁷³ Additionally, the camera was equipped with "zooming and panning capabilities," much like the technology used in persistent aerial surveillance.¹⁷⁴ The court distinguished the facts from other decisions it cited to where the evidence was not suppressed.¹⁷⁵ It made clear that the front yard was "not a public or urban setting," and that a continuous recording of the defendant's front yard for a six-week period violated his reasonable expectation of privacy.¹⁷⁶ The court relied on an established contrast with

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

¹⁶⁷ *United States v. Graham*, 824 F.3d 447, 447–48 (4th Cir. 2016).

¹⁶⁸ See *United States v. Garcia-Gonzalez*, No. CR 14-10296-LTS, 2015 WL 5145537 at *4–5, 8 (D. Mass. Sept. 1, 2015); *United States v. Vargas*, 2014 U.S. Dist. LEXIS 184672 at *1–2, 12–13 (E.D. Wash. Dec. 15, 2014); *United States v. White*, 62 F. Supp. 3d 614, 622–24 (E.D. Mich. 2014); *United States v. Houston*, 965 F. Supp. 2d 855, 870 (E.D. Tenn. 2013); *Shafer v. City of Boulder*, 896 F. Supp. 2d 915, 930–32 (D. Nev. 2012).

¹⁶⁹ *White*, 62 F. Supp. 3d at 624.

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

¹⁷² Order Granting Defendant's Motion to Suppress at 1–2, 12–13, *Vargas*, 2014 U.S. Dist. LEXIS 184672, ECF No. 106.

¹⁷³ *Id.* at 1.

¹⁷⁴ *Id.* at 13.

¹⁷⁵ *Id.* at 25–27.

¹⁷⁶ *Id.* at 26.

Ciraolo and also cited to a District of Nevada decision for support.¹⁷⁷ In *Shafer v. City of Boulder*, the court held that filming of the plaintiff's backyard for nearly two months constituted a search.¹⁷⁸ The court reasoned that such a dragnet police practice is entirely dissimilar from a naked-eye observation or a single photograph taken by an officer.¹⁷⁹

Not all courts that have considered the mosaic theory have relied on it in their decisions. Indeed, there are a handful of district court decisions that rely on the plain view and open fields doctrines to hold different forms of constant monitoring to not be searches.¹⁸⁰ In *United States v. Garcia-Gonzalez*, the court stated that it was persuaded by the approach and analysis of the mosaic theory; however, it was bound by First Circuit precedent laid out in *United States v. Bucci*.¹⁸¹ Essentially, that circuit applies the plain view doctrine to these types of situations.¹⁸² A similar reasoning was applied by the Eastern District of Tennessee in *United States v. Houston*.¹⁸³ There, the court also relied on the fact that all of the areas that had been surveilled were exposed to the public.¹⁸⁴ The open fields doctrine was referenced by the court for even more support.¹⁸⁵ And not surprisingly, the court found that pole camera was not a search.¹⁸⁶ But, interestingly enough, the court went on to hold that because the surveillance stretched to ten weeks, it violated the individual's reasonable expectation of privacy.¹⁸⁷ Thus, a constitutional search became an unreasonable one, breaching the protections of the Fourth

¹⁷⁷ *Id.* at 18 (“The permitted “plain view” observations in *Ciraolo*, however, are much different from law enforcement’s electronic, continuous remote surveillance here.”).

¹⁷⁸ 896 F. Supp. 2d 915, 930 (D. Nev. 2012).

¹⁷⁹ *Id.* at 930–932; *see also* Order Granting Defendant’s Motion to Suppress at 1–2, 12–13, *United States v. Vargas*, 2014 U.S. Dist. LEXIS 184672 (E.D. Wash. Dec. 15, 2014), ECF No. 106 (“This ‘view’ is so different in its intrusiveness that it does not qualify as a plain-view observation.”).

¹⁸⁰ *See generally* *United States v. Garcia-Gonzalez*, No. CR 14-10296-LTS, 2015 WL 5145537 (D. Mass. Sept. 1, 2015); *United States v. Houston*, 965 F. Supp. 2d 855 (E.D. Tenn. 2013), *objections overruled*, No. CRIM.A. 3:13-10-DCR, 2013 WL 5936655 (E.D. Tenn. Nov. 1, 2013).

¹⁸¹ *United States v. Garcia-Gonzalez*, No. CR 14-10296-LTS, 2015 WL 5145537, at *8–9 (D. Mass. Sept. 1, 2015).

¹⁸² 582 F.3d 108, 116–17 (1st Cir. 2009) (“There are no fences, gates or shrubbery located in front of [Bucci’s residence] that obstruct the view of the driveway or the garage from the street. Both [are] plainly visible. An individual does not have an expectation of privacy in items or places he exposes to the public.”) (internal quotations omitted).

¹⁸³ *See generally* *United States v. Houston*, 965 F. Supp. 2d 855 (E.D. Tenn. 2013), *objections overruled*, No. CRIM.A. 3:13-10-DCR, 2013 WL 5936655 (E.D. Tenn. Nov. 1, 2013).

¹⁸⁴ *Id.* at 870.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.* at 898.

¹⁸⁷ *Id.*

Amendment.¹⁸⁸

E. THE IMPORTANCE OF PERSISTENT AERIAL SURVEILLANCE DOES NOT CALL FOR WARRANTLESS SEARCHES IN BALTIMORE

To be sure, this new technology presents practical, jurisdictional, and social advantages which make it an attractive investigative technique for police departments nationwide. The technology is an asset in the fight against crime, and courts tend not to instruct the police on how to conduct their investigations. At least one court, however, has recognized that holding that persistent surveillance is a search would not start the judiciary down a slippery slope of superimposing its will on the executive.¹⁸⁹

Additionally, Professor Kerr has argued that it is too difficult for a district court to determine where to draw the line.¹⁹⁰ Justice Alito struggled with this lack of a bright line in *Jones*.¹⁹¹ There, Justice Alito stated that four weeks was “surely” too long; however, he expressly refused to draw the line.¹⁹² But one district court has argued that courts are capable of making these determinations, and indeed, must do so.¹⁹³

The investigatory prowess of this technology cannot be denied. It has an unlimited amount of ability and application, and it could certainly help with crime reduction. In some cases, prolonged surveillance may be essential to the investigation. As one court stated: “[l]onger surveillances may require more justification, and a case might be made that the government’s reasons underlying the need for tracking—in the case of domestic terrorism, for example—may call for less.”¹⁹⁴ It goes without saying that persistent surveillance can be used to increase safety and sense of security.

Not only in the United States, but around the world, law enforcement

¹⁸⁸ *Id.* It is worth noting that the court did go on to find that the good faith exception applied, and based on that, the evidence should not be excluded. *Id.*

¹⁸⁹ *See United States v. Maynard*, 615 F.3d 544, 565 (D.C. Cir. 2010) (“Regarding visual surveillance so prolonged it reveals information not exposed to the public, we note preliminarily that the Government points to not a single actual example of visual surveillance that will be affected by our holding the use of the GPS in this case was a search.”).

¹⁹⁰ *See, e.g., Kerr, supra* note 137, at 330–36.

¹⁹¹ *United States v. Jones*, 565 U.S. 400, 430 (2012) (Alito, J., concurring).

¹⁹² *Id.* (“We need not identify with precision the point at which the tracking of this vehicle became a search, for the line was surely crossed before the 4-week mark.”).

¹⁹³ *United States v. White*, 62 F. Supp. 3d 614, 623–24 (E.D. Mich. 2014) (likening “when the aggregation of data showing movement in public spaces crosses the line and becomes a ‘search’” to “how long may law enforcement detain property waiting for a drug detection dog to arrive for a sniff before the intrusion matures into a ‘seizure’?”).

¹⁹⁴ *Id.* at 624.

agencies and officials argue that security cameras help investigate crime.¹⁹⁵ First, the evidence from a live recording is very reliable and leads to high conviction rates.¹⁹⁶ Unlike humans, the footage does not lie.¹⁹⁷ High-resolution cameras present objective and indisputable evidence that can be used in a court of law.¹⁹⁸ Second, the use of surveillance cameras may support deterrence, and has—in some cases—led to significant crime reduction.¹⁹⁹ Not only are police capable of going back to the tapes and seeing who actually stole that watch, or vandalized that vehicle, but they can also intervene during the commission of a crime.²⁰⁰ Third, this technology can help not just in the fight against crime, but also in other public safety and security situations, such as traffic management and highway control.²⁰¹ In fact, the state is given great deference when it comes to matters of national security and other issues arising under its general police power.²⁰² In its review of police investigation specifically, the Supreme Court has often reiterated the deference it owes to law enforcement.²⁰³ These considerations would come into play if the Court, or any lower court, were to evaluate the government's use of this technology.

It is no answer that persistent aerial surveillance is not akin to—or as

¹⁹⁵ Max Guirguis, *Electronic Visual Surveillance and the Reasonable Expectation of Privacy*, 9 J. TECH. L. & POL'Y 143, 144 (2004).

¹⁹⁶ *Id.* at 144–45.

¹⁹⁷ *Id.*

¹⁹⁸ *Id.* at 145.

¹⁹⁹ *Id.* at 147–48, n.1. *But see* Rita F. Aronov, *Privacy in A Public Setting: The Constitutionality of Street Surveillance*, 22 QUINNIPIAC L. REV. 769, 802 (2004) (citing to Christopher S. Milligan, Note, *Facial Recognition Technology, Video Surveillance, and Privacy*, 9 S. CAL. INTERDISC. L. J. 295, 298 (1999)); Christopher Slobogin, *Public Privacy: Camera Surveillance of Public Places and the Right to Anonymity*, 72 MISS. L. J. 213, 229–30 (2002).

²⁰⁰ *See* Guirguis, *supra* note 195, at 145.

²⁰¹ Max Guirguis, *Electronic Visual Surveillance and the Reasonable Expectation of Privacy*, 9 J. TECH. L. & POL'Y 143, 145–46 (2004).

²⁰² *See* Laura K. Donohue, *Anglo-American Privacy and Surveillance*, 96 J. CRIM. L. & CRIMINOLOGY 1059, 1189 (2006) (“Mayor Daley boasted, “[t]his project is a central part of Chicago’s response to the threat of terrorism, as well as an effort to reduce the city’s crime rate.”).

²⁰³ *See* Ornelas v. United States, 517 U.S. 690, 699 (1996) (stating that “a reviewing court should take care . . . to give due weight to inferences drawn from those facts by . . . local law enforcement officers . . . through the lens of his police experience and expertise.”); *United States v. Cortez*, 449 U.S. 411, 418 (1981) (the Court has clarified that “a trained officer draws inferences and makes deductions . . . that might well elude an untrained person”); *Brown v. Texas*, 443 U.S. 47, 52 n.2 (1979) (reasoning that courts should defer to the “observations of a trained, experienced police officer who is able to perceive and articulate meaning in given conduct which would be wholly innocent to the untrained observer”); *Terry v. Ohio*, 392 U.S. 1, 27 (1968) (explaining that courts should give “due weight . . . to the specific reasonable inferences which [an officer] is entitled to draw from the facts in light of his experience”).

severe as—other violations of fundamental rights. Compare constant monitoring with free speech or bodily integrity: arguably, the technology does not have that chilling effect Justice Sotomayor warned of in *Jones*. Undeniably, location monitoring is different than speech, where an individual could be forced to suppress their conversations because of government action. But this is a value judgment that society is tasked with making. As pointed out above, a majority of the American public supports the use of cameras in public spaces.²⁰⁴ In Washington, D.C., residents of high crime neighborhoods have actually petitioned the government to install more cameras.²⁰⁵ In an increasingly globalized and dangerous world, it certainly seems like “many citizens have been willing to trade privacy for safety, and thus [do] not mind being watched.”²⁰⁶ Despite the willingness to forego their own privacy interests, consent is an independent and unique issue with regards to persistent surveillance. And remember, the citizens of Baltimore were not informed of the deployment of this technology.²⁰⁷ It might be the case that the public is willing to approve of surveillance if they are on notice of themselves being monitored, as is the situation with street-level security cameras.

CONCLUSION

The Court would be correct in likening persistent aerial surveillance to GPS monitoring. Furthermore, it would be appropriate to complete the carving out of the exception to the broad *Knotts*²⁰⁸ rule that they began in *Jones*.²⁰⁹ when traveling in public areas, an individual has an expectation of privacy in not being subjected to long-term surveillance. As Justice Alito and Justice Sotomayor’s concurring opinions in *Jones* illustrate, five justices did conclude that there was an abuse of that expectation.²¹⁰ A majority could be reinforced if the facts of the case did not include a physical trespass; persistent aerial surveillance does not. Constant monitoring over an extended period of time reveals intimate details of habit, which, when viewed in the

²⁰⁴ See *supra* notes 40–42. Cf. Guirguis, *supra* note 195, at 146–147.

²⁰⁵ Guirguis, *supra* note 195, at 148–49.

²⁰⁶ Robert D. Bickel et. al., *Seeing Past Privacy: Will the Development and Application of CCTV and Other Video Security Technology Compromise an Essential Constitutional Right in A Democracy, or Will the Courts Strike A Proper Balance?*, 33 STETSON L. REV. 299, 302 (2003).

²⁰⁷ See *supra* note 22.

²⁰⁸ *United States v. Knotts*, 460 U.S. 276, 276 (1983) (holding that continuous GPS monitoring in public for a short period constitutional).

²⁰⁹ *United States v. Jones*, 565 U.S. 400, 409 (2012) (ruling that longer-term GPS monitoring impinges upon expectations of privacy).

²¹⁰ *Id.*

aggregate, exposes the privacies of life to the world. The Fourth Amendment prohibits such a result. Persistent aerial surveillance is a search. And without a warrant and probable cause, it is an unconstitutional invasion of privacy.