

Fourth Amendment Considerations in the Utilization of Drones by Law Enforcement

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Introduction

The growth of electronic means of surveillance has presented the U.S. Supreme Court with new constitutional issues, particularly concerning an individual's right to privacy. Unmanned Aerial Vehicles (UAVs), more commonly known as drones, are particularly susceptible to these concerns due to their ability to aerially record audio or videos, take photographs, or otherwise document their surroundings. Outside of commercial or personal use, governmental entities, such as local law enforcement, have begun utilizing drones for various purposes, including, amongst other things, border monitoring, crime-scene photography, and aerial surveillance.¹

Although UAVs were originally used for military purposes, law enforcement agencies have increasingly introduced drones into their arsenal. With the rise in law enforcement agencies deploying drones, privacy advocates have been duly concerned over an individual's right to privacy from these aerial vehicles. Since certain drones can engage in pervasive forms of digital surveillance and data collection, there have been rising uncertainties as to what extent law enforcement can utilize this highly multifarious technology. In the United States, there has been greater consideration as to whether the use of drones by law enforcement interferes with people's Fourth Amendment constitutional rights,

¹ *How Drones Will Impact Society: From Fighting War to Forecasting Weather, UAVs Change Everything*, CBINSIGHTS (Feb. 9, 2020), <https://www.cbinsights.com/research/drone-impact-society-uav/>.

particularly when deployed without “any constitutionally mandated warrant[s].”²

The Fourth Amendment asserts “the right of the people to be secure in their persons, houses, papers, and effects against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.”³ The wording of this Amendment has prompted the Court to focus on two of its clauses – the prohibition of “unreasonable” seizures and searches and the conditions required to issue a legal warrant. Moreover, with a few exceptions, probable cause must be present for a search to be deemed lawful. However, probable cause and warrants do not apply if the circumstances do not fall under the unreasonable search and seizure constraints of the Fourth Amendment.

This article explores the constitutional issues arising from law enforcement's use of drone technology as a means of surveillance and analyzes how our general right to privacy might be affected. Section 1 focuses on the burgeoning role and applications of drones in civil society and how their use relates to the Fourth Amendment of the U.S. Constitution. Section 2 explores what existing case law suggests about drone usage, such as whether drone surveillance constitutes a “search” under the Fourth Amendment and, if it does, whether the Fourth Amendment considers such surveillance as “unreasonable.” Section 2 further examines the Fourth Amendment's privacy implications through

² Andrew B. Talai, *Drones and Jones: the Fourth Amendment and Police Discretion in the Digital Age*, CAL. L. REV., Vol. 102, No. 3 (June 2014), at 729-780, <https://www-jstor-org.ezproxy.fau.edu/stable/pdf/23784319.pdf?refreqid=excelsior%3A555248858a9a90306ff85912bd46cc4f>.

³ U.S. CONST. amend. IV.

existing Fourth Amendment search theories — the reasonable expectation of privacy test, the trespass test, and the mosaic theory — to determine how they can be applied to drone technology. Finally, Section 3 analyzes how the implementation of drone technology by law enforcement as a means of surveillance relates to Fourth Amendment jurisprudence, including what current case law indicates about future drone deployment by governmental agencies.

Section I

The Development and Increasing Utilization of Unmanned Aerial Vehicles

In light of their growing accessibility and wide assortment of applications, drones have experienced a significant boost in popularity, prompting various individuals and industries to utilize the technology.⁴ In 2018, the Federal Aviation Administration (FAA) recorded over 1 million drone registrations in their database, with no signs of slowing down.⁵ In fact, it is estimated that the drone market could reach \$46 billion USD by 2026.⁶ What started primarily as military usage evolved into drones entering commercial, recreational, investigatory, and even criminal use. What makes drones an attractive commodity is their virtually infinite spectrum of applications, advanced methods of

⁴ How Drones Will Impact Society: From Fighting War to Forecasting Weather, UAVs Change Everything, *supra* note 1.

⁵ *FAA Drone Registry Tops One Million*, U.S. DEPT OF TRANSP (Jan. 10, 2018), <https://www.transportation.gov/briefing-room/ faa-drone-registry-tops-one-million> [<https://perma.cc/RCL9-U5FY>].

⁶ Joseph Suh, *Drones: How They Work, Applications, and Legal Issues*, GEO. L. TECH. REV. 502 (2019), <https://georgetownlawtechreview.org/wp-content/uploads/2019/05/3.1-Suh-pp-502-514c.pdf>

observation, and their ability to reach remote areas with the slightest amount of time and effort.

Domestic Drone Usage and Applications

In the early 2000s, the U.S. military drone, Predator, became the first weapon of its kind to be used by operators to stalk and kill an individual overseas. Through its use, Predator demonstrated the evolving scope of drone capabilities and reshaped the way the military and other sectors considered unmanned aircraft technology.⁷ Today, drone technology has evolved to undertake an impressive variety of tasks in the domestic market. Technological advancements have further driven down drone costs and made them more readily accessible to both domestic consumers and industries alike. According to the FAA, approximately 1.1 million hobbyist drone units and 412,000 commercial drone units were registered in 2019.⁸

Due to a drone's ability to take unique aerial footage, one of the most popular forms of personal drone use has been recreational photography and filmography.⁹ The latest hobbyist drones are also programmable to do neat tricks, such as mid-air flips, and even offer immersive flying experiences, sometimes compatible with VR (virtual reality) headsets.¹⁰ The commercial drone industry has also steadily gained momentum, reinventing or even conceiving new business practices. Industries have

⁷ Daniel Terdiman, *The History of the Predator*, the Drone That Changed the World (Q&A), CNET (Sept. 20, 2014, 4:00 AM), <https://www.cnet.com/news/the-history-of-the-predator-the-drone-that-changed-the-world-q-a/> [<https://perma.cc/4UE6-6M5B>].

⁸ *Facts + Statistics: Aviation and drones*, INSURANCE INFO. INST. (2018), <https://www.iii.org/fact-statistic/facts-statistics-aviation-and-drones>

⁹ Suh, *supra* note 6

¹⁰ Minhaj, *9 Reasons To Buy a Drone*, DRONES NEWS AND REVIEWS (May 23, 2018), <https://yourdronereviews.com/9-reasons-to-buy-drone>.

been particularly interested in deploying drones in real estate, agriculture, architecture, photography, environmental monitoring, and delivery services.¹¹ E-commerce giant Amazon, for instance, has been looking to utilize drones to deliver packages directly to consumer's doors in a new initiative called Amazon Prime Air.¹²

Drone Use by Law Enforcement Agencies

Given their wide range of operational and public safety applications, drones have also become useful crime-fighting tools for law enforcement.¹³ In the wake of the recent COVID-19 (novel coronavirus) outbreak, Chinese law enforcement officials have begun to utilize drone technology “to help ensure that an estimated 50 million residents are kept at home and indoors” in an effort to contain the coronavirus.¹⁴ In the United States, the recent case of *State v. Brossart* was the first time that local law enforcement arrested a suspect with the aid of a surveillance drone.¹⁵ According to The Center for the Study of the Drone at Bard

¹¹ Adam C. Uzialko, *10 Cool Commercial Drone Uses Coming to a Sky Near You*, BUS. NEWS DAILY (May 10, 2018), <https://www.businessnewsdaily.com/9276-commercial-drones-business-uses.html>.

¹² Jillian D'Onfro, *Amazon's New Delivery Drone Will Start Shipping Packages 'In A Matter Of Months'*, FORBES (Jun 5, 2019), <https://www.forbes.com/sites/jilliandonfro/2019/06/05/amazon-new-delivery-drone-remars-warehouse-robots-alexa-prediction/#647cca1a145f>.

¹³ Mary Mara, *A Look at the Fourth Amendment Implications of Drone Surveillance by Law Enforcement Today*, CONLAWNOW (2017), <https://ideaexchange.uakron.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1047&context=conlawnow>.

¹⁴ Zak Doffman, *This New Coronavirus Spy Drone Will Make Sure You Stay Home*, FORBES (Mar. 5, 2020, 11:23am), <https://www.forbes.com/sites/zakdoffman/2020/03/05/meet-the-coronavirus-spy-drones-that-make-sure-you-stay-home/#1e0224621669>.

¹⁵ Talai, *supra* note 2.

College, unmanned aerial drones are assisting officers in at least 910 law enforcement agencies in 49 U.S. states.¹⁶ These drones have assisted police in areas such as aerial traffic and crowd management, search and rescue operations, crime-scene photography, bomb investigations, and surveillance of fires and other disasters.¹⁷ Part of why unmanned aerial drones are progressively more favorable for law enforcement over traditional manned aircrafts (e.g., helicopters) is because drones are far less costly to operate and store. Additionally, some drones are able to use mapping technology to assess dangerous landscapes and their smaller frames allow entry into hard to reach areas otherwise inaccessible to law enforcement personnel.¹⁸

Constitutional Concerns at The National Level

Despite how efficient and cost-effective drone technology can be when it comes to public safety, its unregulated use by police has disturbed several privacy advocates,¹⁹ specifically in regard to the way personal information may be obtained and processed. Technological sophistication has developed at such a vigorous pace that our laws and Fourth Amendment jurisprudence have had a hard time keeping up. One of the principal reasons why drone usage by law enforcement is considered such an issue is because it entrusts agencies with a tool that, if misused, can violate an individual's privacy rights. Of particular concern is the deployment of drones for search and surveillance without a valid warrant for both long and short-term scrutiny. Supreme Court

¹⁶ Dan Gettinger, *Public Safety Drones: An Update*, Center For The Study Of The Drone At Bard College (May 28, 2018) <https://dronecenter.bard.edu/public-safety-drones-update/>; <https://dronecenter.bard.edu/files/2018/05/CSD-Public-Safety-Drones-Update-1.pdf>.

¹⁷ Suh, *supra* note 6.

¹⁸ Mara, *supra* note 13.

¹⁹ Id.

Justice Sotomayor herself acknowledged that the “government’s unrestrained power to assemble data . . . is susceptible to abuse. The net result is that . . . monitoring—by making available at a relatively low cost such a substantial quantum of . . . information about any person whom the Government, in its unfettered discretion, chooses to track—may ‘alter the relationship between citizen and government in a way that is inimical to democratic society.’”²⁰ The power gained over an individual from such monitoring could breach their reasonable expectation of privacy and thus violate their Fourth Amendment constitutional rights.

Although the issue of drone deployment and utilization by law enforcement has yet to arrive before the Supreme Court, the mounting prevalence of drone technology today mandates a closer look at potential constitutional issues that might arise. In the subsequent sections, the cases described can provide guidance as to what direction the Supreme Court might take apropos of the constitutionality of drone deployment.

Section II

Fourth Amendment Implications of Drone Surveillance

While many state statutes expressly protect an individual’s privacy, the U.S. Constitution has been interpreted to impart privacy implicitly. The Supreme Court recently established this federal right to privacy as a penumbra, or implied protection, despite the absence of express terminology in the Constitution that directly authorizes the right.²¹ Under the penumbra theory, zones of privacy inherently exist in several

²⁰ *United States v. Jones*, 132 S. Ct. 945, 956 (2012) (Sotomayor, J., concurring) (as seen in Talai, *supra* note 2).

²¹ Frank Schmalleger & Daniel E. Hall, *CRIMINAL LAW TODAY* 15 (Pearson, 6th ed., 2016).

amendments of the Constitution.²² The Fourth Amendment has been interpreted as to provide a zone in which privacy is protected against “unreasonable searches and seizures.” One of the largest concerns with unmanned aerial vehicles is whether their usage constitutes a search in the first place. Drones can be used to identify people and track their movements, often surreptitiously. Depending on the type and model of drone, they can further intercept electronic communications, take thermal-sensitive pictures, use facial recognition technology, and host GPS capabilities.²³ Since certain drones can engage in invasive forms of digital surveillance, Fourth Amendment privacy implications arise when drone technology is employed. Although the Supreme Court has yet to apply the Fourth Amendment directly to drones, legal precedents can provide insight as to how surveillance by drones relates to the Fourth Amendment.

The Reasonable Expectation of Privacy Test

In the case of *Katz v. United States* (1967), the Supreme Court formulated the reasonable expectation of privacy test, which focused on whether the surveillance in question invaded an individual's “expectation of privacy.”²⁴ The *Katz* decision was the first time the Court acknowledged that the Fourth Amendment “protects individual privacy against certain kinds of governmental intrusion.”²⁵ The Court found that government agents electronically eavesdropping on Katz's phone booth conversation infringed upon the privacy Katz reasonably expected he would have.²⁶

²² Id.

²³ Mara, *supra* note 13.

²⁴ See *Katz v. United States*, 389 U.S. 347 (1967).

²⁵ Id.

²⁶ Robert Molko, *The Drones Are Coming! Will the Fourth Amendment Stop Their Threat to Our Privacy?*, BROOK. L. REV. (2013), <https://brooklynworks.brooklaw.edu/cgi/viewcontent.cgi?article=1086&context=blr>.

The Court further decreed that the agents did indeed conduct a search through their eavesdropping. In Justice Harlan's concurrence, he added "that there is a twofold requirement, first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"²⁷ In essence, he proposed that investigatory processes only shift into "searches" when they encroach upon a *subjective expectation of privacy* that is *objectively reasonable*.²⁸

One of the important takeaways from *Katz* was best summarized up by Justice Stewart, who wrote: "The Fourth Amendment protects people, not places."²⁹ Although the reasonable expectation of privacy test grants no protection in spaces deemed "public", it may impart protection for when someone reasonably expects a certain level of privacy. This includes certain private spaces, such as an enclosed phone booth or in one's home.

In light of this seminal case, one must consider whether drones can be used to surveil private property as well as public areas. Without first obtaining a warrant, law enforcement cannot surveil a location where a person truly expects some degree of privacy and that expectation of privacy is objectively reasonable. In other words, an individual's expectation is one that society must be able to willingly recognize as private. In *California v. Ciraolo* (1986), the Supreme Court decided that an individual's private property is not shielded from law enforcement as long as an aircraft stays in the public airways. In *Ciraolo*, public airways were considered to be at an altitude of 1,000 feet. Justice White remarked,

²⁷ *Id.*

²⁸ Talai, *supra* note 2.

²⁹ Nicandro Iannacci, *Katz v. United States: The Fourth Amendment adapts to new technology*, CONST. DAILY (Dec. 18, 2018), <https://constitutioncenter.org/blog/katz-v-united-states-the-fourth-amendment-adapts-to-new-technology>.

“[t]he Fourth Amendment simply does not require the police traveling in the public airways at [this altitude] to obtain a warrant in order to observe what is visible to the naked eye.”³⁰ Although the aerial surveillance in *Ciralo* was from a manned aircraft (a private airplane),³¹ drones can reach similar altitudes and also hover over homes.

In the remarkably similar case of *Kyllo v. United States* (2001), the Court concluded that using infrared detection on a suspect's house constitutes a method of surveillance that violates a person's reasonable expectation of privacy.³² Specifically, when “the Government uses a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, the surveillance is a ‘search’ and is presumptively unreasonable without a warrant.”³³ As the *Kyllo* and *Ciralo* cases reveal, the home is one of the most private places; thus, using technology to observe beyond what a normal person could detect constitutes an “unreasonable search” in the eyes of the Court. Drone technology's versatility and myriad applications could signify that drones specifically equipped with invasive capabilities, like infrared detection, should not be used by law enforcement for surveillance without a warrant.

The Trespass Test

One of the chief concerns with any type of electronic surveillance is the lack of any physical intrusion. In *United States v. Jones* (2012), the Court ruled that law enforcement officers planting a GPS device without a valid

³⁰ Talai, *supra* note 2, at 754.

³¹ *Id.*

³² *See Kyllo v. United States*, 533 U.S. 27, 34.

³³ *Id.*

warrant on an automobile amounted to a search.³⁴ *Jones* echoed the notion that it is difficult to consider whether a search was made without seizure of papers, tangible material effects, or the presence of physical trespass of a location. Justice Scalia's opinion for the majority reverted to the common-law trespass test for searches, noting that the *Katz* decision “added to, not substituted for, the common-law trespassory test.”³⁵ In essence, the search conducted in *Jones* was unconstitutional due to *trespassing* by law enforcement in affixing the GPS to Jones’ vehicle. However, by taking this approach, the case neglected to comment on the continuous and prolonged surveillance that resulted from GPS use. Because *Jones* majority’s rule does not discuss whether the mass amount of information gathered was an invasion of Jones’ privacy, the trespass test found in *Jones* provides no security against continued drone surveillance due to its focus on only the physical trespass of private property.

The Mosaic Theory

The mosaic theory is an “aggregation-based concept”³⁶ which “considers whether a set of nonsearches aggregated together amount to a search because their collection and subsequent analysis creates a revealing mosaic.”³⁷ It further holds that, if intrusive enough, the aggregate sum of public surveillance can trigger constitutional protections.³⁸ The case that best addresses prolonged electronic surveillance is the 2010 decision of

³⁴ Daniel T. Pesciotta, *I'm Not Dead Yet: Katz, Jones, and the Fourth Amendment in the 21st Century*, CASE W. RES. L. REV. Vol. 63, Issue 1, <https://scholarlycommons.law.case.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1196&context=caselrev>

³⁵ Talai, *supra* note 2.

³⁶ *Id.*

³⁷ Orin S. Kerr, *The Mosaic Theory of the Fourth Amendment*, 111 MICH. L. REV. 311 (2012), <https://repository.law.umich.edu/mlr/vol111/iss3/1>.

³⁸ Talai, *supra* note 2, at 757.

United States v. Maynard. The U.S. Court of Appeals for the D.C Circuit held that relentless GPS surveillance of an automobile driving in public roads over the course of twenty-seven days should be construed as a search within the constraints of the Fourth Amendment.³⁹

Although the *Katz* standard classified a person moving through “public thoroughfares” as having “no reasonable expectation of privacy in his movements from one place to another”,⁴⁰ Judge Ginsburg of the D.C Circuit asserted that “the whole of a person's movements over the course of a month is not actually exposed to the public because the likelihood a stranger would observe all those movements is not just remote, it is essentially nil.”⁴¹ The D.C Circuit in *Maynard* held that surveillance by law enforcement on public roads would not in itself be a breach of the Fourth Amendment, but aggregated and persistent surveillance would be, consequently developing a “right to privacy in public movement.”⁴²

In *United States v. Jones*' majority opinion, Justice Scalia declined to consider the mosaic theory.⁴³ However, both Justices Alito and Sotomayor's concurrences in *Jones* comment on how continuous, warrantless GPS surveillance may breach an individual's reasonable expectation of privacy.⁴⁴ Akin to Justice Alito, Justice Sotomayor observed that physical trespass is increasingly “unnecessary”⁴⁵ in light of

³⁹ Kerr, *supra* note 37.

⁴⁰ *Knotts*, 460 U.S. at 281-82 (as seen in <https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1079&context=mlr>).

⁴¹ *Maynard*, 615 F.3d at 560 (as seen in Talai, *supra* note 2, at 757).

⁴² Talai, *supra* note 2, at 758.

⁴³ *United States v. Jones*, 132 S. Ct. 945, 954 (2012).

⁴⁴ Kerr, *supra* note 37.

⁴⁵ *United States v. Jones*, 565 U.S. at 414 (Sotomayor, J., concurring).

newly emerging forms of surveillance because “electronic or other novel modes of surveillance... do not depend upon physical intrusion.”⁴⁶

On the other hand, the fissure between the two concurrences emanates from their differing opinions over the trespassory test. Justice Alito disagrees with the majority holding's trespass test approach, quoting that “an actual trespass is neither necessary nor sufficient to establish a constitutional violation.”⁴⁷ In contrast, Justice Sotomayor welcomed the trespass method as “longstanding protection... inherent in items of property that people possess or control”⁴⁸ and held that “Katz's reasonable-expectation-of-privacy test augmented, but did not displace or diminish, the common-law trespassory test that preceded it.”⁴⁹

There is further disparity in their concurrences over the distinction between short-term and long-term surveillance. Joined by Justices Ginsburg, Kagan, and Breyer, Justice Alito's concurrence reasons that an individual's reasonable expectation of privacy is not infringed by “short-term [GPS] monitoring of a person's movements on public streets.”⁵⁰ He further attempts to differentiate short-term and long-term public surveillance, indicating that only long-term surveillance is unreasonable.⁵¹ On the other hand, Justice Sotomayor went further still and disputed the constitutionality of short-term warrantless searches. She

⁴⁶ Talai, *supra* note 2, at 759.

⁴⁷ *United States v. Karo*, 468 U.S. 705, 712–13 (1984); Pesciotta, *supra* note 34.

⁴⁸ *United States v. Jones*, *supra* note 45.

⁴⁹ *Id.*

⁵⁰ *United States v. Jones*, 565 U.S. at 414 (Alito, J., concurring); Pesciotta, *supra* note 34, at 212.

⁵¹ Pesciotta, *supra* note 34.

reasoned that even short-term GPS surveillance could reveal private details of a person's life and thus should be counted as a search.⁵²

One thing is certain, the mosaic theory invites a closer look at the severity of prolonged surveillance. With their expanding capabilities, drones are able to conduct aerial observations for longer and more continuous periods of time. Further still, some consider drones to be even more invasive than traditional manned aircrafts⁵³ particularly due to their “highly efficient and persistent, difficult to detect, and difficult to resist tracking methods.”⁵⁴

Section III

What Does This Mean Going Forward?

Although technological advancements have allowed drones to become more commonplace, they remain relatively new in the eyes of the Court. State and local governments have thus taken it upon themselves to introduce or institute legislation in an attempt to regulate drone usage in their jurisdictions in ways federal proposed regulations might have overlooked.⁵⁵ According to the National Conference of State Legislatures, several states have focused on addressing drone issues in both privacy or warrant-specific legislations in effort to curb or otherwise regulate UAV usage.⁵⁶ For example, some states require law enforcement to acquire a warrant to use drones to conduct a search unless certain

⁵² Id.

⁵³ David Ovalle, *From above, Miami-Dade police drone recorded crack cocaine sale live. It's a first, cops say*, MIAMI HERALD (Jan 16, 2020, 6:00AM), <https://www.miamiherald.com/news/local/crime/article239246988.html>.

⁵⁴ Talai, *supra* note 2.

⁵⁵ W.F. Casey Ebsary, *Tampa Drug Lawyer on Marijuana Drones*, CENTRAL LAW (Feb. 18, 2015), <https://www.centrallaw.com/tampa-drug-lawyer-marijuana-drones-video/>.

⁵⁶ Mara, *supra* note 13.

circumstances delineated in the legislation are present. In reaction, the Federal Aviation Administration (FAA) has advised states that their legislatures are allowed to generate their own drone-related legislation provided that they do not intrude upon FAA's jurisdiction or otherwise threaten airspace safety.⁵⁷ The FAA's new fact sheet on state and local regulation of unmanned aircraft systems delineates the following areas as reserved to state and local government authority:

- (1) requirements for police to secure a warrant before using a drone for surveillance purposes;
- (2) exclusions on using drones for voyeurism;
- (3) prohibitions on drone use for fishing or hunting, or to hassle or otherwise interfere with individuals engaged in fishing or hunting; and
- (4) bans on attaching firearms or other similar weapons to a drone.⁵⁸

Most notable on this list is the discretion states are given over police UAV warrant requirements. At the writing of this article, some state's law enforcement agencies require a judicially authorized warrant for drone use, others do not.⁵⁹ Since the Supreme Court has yet to set a firm standard on the issue of warrantless drone use, this is particularly significant for the future utilization of drones by law enforcement agencies.

⁵⁷ *Id.*

⁵⁸ FAA Issues Fact Sheet on State and Local UAS Laws, FAA (Dec. 17, 2015), <https://www.faa.gov/news/updates/?newsId=84369>;

https://www.faa.gov/uas/resources/policy_library/media/UAS_Fact_Sheet_Final.pdf

⁵⁹ *Current Unmanned Aircraft State Law Landscape*, NCSL (Mar 10, 2020), <https://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx>.

What Case Law Suggests About the Future of Drone Deployment by Law Enforcement

As legal analyst Matthew Feeney recently remarked “[t]he Supreme Court has addressed Fourth Amendment privacy questions raised by new technologies such as GPS locators, thermal scanners, and smartphones. However, the Court has yet to tackle the Fourth Amendment questions raised by the emergence of drones.”⁶⁰ Despite this, current Supreme Court precedents can serve as a solid starting point for assessing the constitutionality of drone surveillance use by law enforcement.

Although the *United States v. Jones* decision gave direction as to what constitutes a search, it sidestepped the issue of electronic surveillance. Under *Jones*, the trespass test is confined to an actual physical presence on private property. As such, no matter how invasive, the trespass test does not offer protection from the complexities of aerial surveillance. The public thoroughfare distinction also cannot be applied for drones do not physically trespass upon property. In fact, *Jones* offers no privacy protection from virtually any aircraft flying in legal airspace, whether manned or unmanned.⁶¹ Since drones cannot physically penetrate property, only the mosaic theory and the *Katz* test are best equipped to deal with drone surveillance.

The mosaic theory has only been used successfully in two cases, *United States v. Maynard* and *People v. Weaver*,⁶² and was considered indirectly in Justices Alito and Sotomayor's concurrences in *Jones*.⁶³ This theory implies that excessive data aggregation by surveillance drones may be deemed unconstitutional. In recent years, drones have become an

⁶⁰ Mara, *supra* note 13, at 10.

⁶¹ Pesciotta, *supra* note 34.

⁶² Talai, *supra* note 2.

⁶³ *United States v. Jones*, *supra* note 43.

effective tool, able to track a single person or even capture aerial views of an entire town. In addition, technological sophistication has increased the flight duration of many drones.⁶⁴ Taking this into consideration, one of the largest issues with the mosaic theory is that it neither presents a solid framework for its application, nor does it aptly define what constitutes short-term and long-term surveillance. Under the mosaic theory, long-term surveillance conducted in public spaces would amount to a search. However, a single snapshot would not.⁶⁵ Applying the mosaic theory to the utilization of drone surveillance would demand the differentiation between a "single frame" of surveillance, which would not be considered a search, from a more pervasive one.⁶⁶

When it comes to the reasonable expectation of privacy test, *Katz* and similar court precedents have examined: (1) whether the surveillance happened in public or within a home's curtilage; (2) whether the surveillance was conducted on public thoroughfares; and, (3) whether the details of a home that would otherwise be unknowable without physical intrusion was searched with technology considered not in general public use.⁶⁷

Although the *Katz* test provides the greatest amount of protection to one's home, it may still fall short in acknowledging if a search has taken place. As seen in *California v. Ciraolo*, the Court found it acceptable for police navigating in public airspace to observe what is in view of the naked eye

⁶⁴ Rachel Levinson-Waldman, *Hiding in Plain Sight: A Fourth Amendment Framework for Analyzing Government Surveillance in Public*, EMORY L. J., Vol. 66:527 (2017), <https://law.emory.edu/elj/content/volume-66/issue-3/articles/hiding-plain-fourth-amendment-government-surveillance-public.html#section-f5adf777385568a87c087894139d4449>.

⁶⁵ Kerr, *supra* note 37.

⁶⁶ Talai, *supra* note 2.

⁶⁷ Id.

without a warrant. Police further have no legal obligation “to shield their eyes when passing by a home on public thoroughfares.”⁶⁸ With this understood, it is reasonable to expect that law enforcement drones will be given similar privileges to transverse over legally navigable airspace. However, as the *Kyllo* case revealed, using technology to observe beyond what a normal person could detect appears to constitute an “unreasonable search” and may require a warrant.

Due to the vast diversity in drone applications, the aforementioned Fourth Amendment search theories are considerably dependent on the facts surrounding each incident and the drone model utilized. Different drone models will have differing surveillance capabilities, some more pervasive than others. As seen in *Kyllo*, it was the infrared component of the aircraft that was deemed to violate a constitutionally protected right. In light of this, courts will need to take the heterogeneity of drone functions into account in their case analysis.

Conclusion

The growth of electronic surveillance has presented the U.S. Supreme Court with new constitutional concerns, namely an individual's right to privacy. Due to the burgeoning accessibility and wide assortment of applications, UAV usage is no longer limited to the military. Increasingly, drones are used for personal, commercial, and law enforcement purposes. Despite the broad range of UAV's operational and public safety applications, Fourth Amendment privacy concerns arise when law enforcement agencies utilize drone technology for surveillance, particularly the extent to which private information may be assembled and processed. Even more worrisome is the deployment of warrantless law enforcement drones for search and surveillance

⁶⁸ Id. (citing *California v. Ciraolo*, 476 U.S. 207, 213).

operations. Unregulated drone use by law enforcement presents a significant issue in the future utilization of drones.

Our court system has yet to weigh in upon the subject of drone utilization by law enforcement agencies. Since warrant requirements for police drone usage falls under state authority, some states may not require their law enforcement agencies to procure a warrant before conducting drone surveillance. In such states, UAV's invasive capabilities indicate there is a higher risk of law enforcement encroaching upon constitutionally protected spaces. Legal precedents provide insight as to how the Fourth Amendment search doctrine relates to surveillance by drone technology. The analysis of the Fourth Amendment search theories – the reasonable expectation of privacy test, the trespass test, and the mosaic theory – has drawn the following conclusions about drone surveillance: The *Jones*' trespass test focuses on whether a physical trespass of law enforcement has occurred, and offers protections in this manner, rather than on the nature of electronic surveillance itself. The reasonable expectation of privacy test may shield certain intimate details of a home observable by specialized, generally unavailable technology, but it presents no security if the surveillance was conducted on public thoroughfares. Finally, the mosaic theory may offer protection against pervasive long-term surveillance but provides little support against short-term surveillance. Until the Supreme Court is confronted with a case challenging the constitutionality of drone surveillance by law enforcement, courts will continue to grapple with the disparity between Fourth Amendment privacy precedents and emerging technologies.