ELECTRIC EYE: MASS AERIAL SURVEILLANCE AND THE FOURTH AMENDMENT

Andrea Carlson[*]

TABLE OF CONTENTS

I. Introduction 168
II. Background 169
A. The Importance of Privacy 169
B. Current Use of Mass Aerial Surveillance 171
C. Predictive Crime Control Model 172
III. Analysis 173
A. The Reasonable Expectation of Privacy and Existing Legal Framework 174
B. Previous Cases Addressing the Use of Aerial Surveillance 176
1. Dow Chemical Company v. United States 176
2. California v. Ciraolo 177
3. Florida v. Riley 178
C. Previous Cases Applying the Fourth Amendment to Evolving Technology 180
1. Kyllo v. United States 180
2. United States v. Jones 181
a. The Mosaic Theory 184
D. Application of the Katz Test to Aerial Surveillance 184
E. Application of the Trespassory Test to Pre-Search Surveillance 185
F. Limitations of Fourth Amendment Protections against Mass Aerial Surveillance 186
IV. Recommendations 187
A. Legislative Solutions 188
1. Resolving Uncertainty in Property-Owner's Rights Over Airspace 188
2. Durational Limits on Surveillance 189
3. Enacting Procedural Protections for Data Collection 190

* J.D., University of Illinois College of Law, 2018; B.A., University of Illinois-Springfield, 2015. This Note is dedicated to the late Maria Tellez-Carlson, for her unconditional love and support of my life and legal education. I would also like to thank my father, Andrew, my extended family and fiancé Jonathan Gaeta. A special thank you to Professor Jason Mazzone of the University of Illinois College of Law for his extensive feedback and comments and to all the editors, members, and staff of JLTP for their contributions to this Note.

4. Mandating a Warrant Before Review of Surveillance Footage or Surveillance 190
5. Mandating a Warrant Before Using Surveillance to Track or Identify an Individual 191
6. Limiting the Potential Abuses of Pre-search Surveillance 192
7. Transparency and Accountability Measures for Footage 193
8. Remedies 194
V. Conclusion 194

I. INTRODUCTION

"Up here in space
I'm looking down on you
My lasers trace
Everything you do
You think you've private lives
Think nothing of the kind
There is no true escape
I'm watching all the time"

Judas Priest, the British heavy-metal band, sang these lyrics in their song, "Electric Eye."[1] The song describes an omnipresent eye which observes the populace at all times. These lyrics describe a terrifying, perpetual surveillance state. It is easy to dismiss the world described in "Electric Eye" as spectacular fiction. Yet, the world which "Electric Eye" describes is not confined to the fictional realm. Due to innovation in surveillance technology, it is closer than ever to becoming a reality. In the near future, every public movement could be monitored and recorded by advanced cameras on planes and drones.

Unknown until fairly recently, several police departments have been utilizing planes equipped with advanced recording technology to survey city areas from the skies.[2] This technology has most recently been used by the Baltimore Police Department.[3] The City of Baltimore contracted with Ohio-based company, Persistent Surveillance Systems (PSS), to provide aerial surveillance of the city by a Cessna airplane equipped with an ultra-wide-angle camera.[4] This type of technology was originally developed for military use,

1. JUDAS PRIEST, *Electric Eye*, *on* SCREAMING FOR VENGEANCE (Ibiza Sound Studios 1982).

2. 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/.

3. Craig Timberg, *New Surveillance Technology Can Track Everyone in 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.

4. *Id.*

specifically in Iraq.[5] However, it is likely that more police departments across the United States will obtain access to and utilize aerial surveillance.[6]

This kind of advancement in surveillance technology undoubtedly leads to new and challenging legal questions. Generally, movements in public have no reasonable expectation of privacy. Yet, the Fourth Amendment does protect "people" and "houses".[7] However, mass aerial surveillance gives law enforcement the power to view both people and houses. As concerns grow regarding the use of aerial surveillance, some have suggested that the Fourth Amendment's prohibition on unreasonable searches may offer protection.[8] Constant surveillance conducted using aircraft could lead to a *Minority Report* world where law enforcement is empowered to act before a crime has even occurred.[9] Aerial surveillance could also be used after a crime has been committed to identify the perpetrator in a dragnet fashion. Both forms of investigation have raised concerns from privacy rights advocates.[10] Some have even characterized these possibilities as "pre-search".[11] Some have called for courts to use the Fourth Amendment as a shield against such practices as it prohibits unreasonable searches and seizures.[12] However, the Fourth Amendment may not prove to be a powerful shield against emerging aerial surveillance technology.

This Note will examine if the Fourth Amendment and legislative action can protect individuals from the prying electric eye of aerial surveillance. Part II will examine the current use and stakes of mass aerial surveillance. It will also review the implications of pre-search surveillance by law enforcement. Part III will review and analyze how the Court has addressed the use of aerial surveillance and evolving technology. This Section will also review to what extent existing Fourth Amendment jurisprudence offers protection against aerial surveillance technologies and tactics. Part IV will recommend proper legislatively enacted limitations on the use of surveillance technology to mitigate the risks of intrusive surveillance technology.

II. BACKGROUND

A. The Importance of Privacy

Aerial surveillance allows law enforcement several advantages. First, it allows law enforcement to review footage for possible suspects and clues before knowing exactly what or whom it is searching for.[13] This type of process has

5. Reel, *supra* note 2.

6. Matthew Feeney, *Using Persistent Surveillance to Watch the Watchmen*, CATO AT LIBERTY (Sept. 20, 2016, 2:35 PM), http://www.cato.org/blog/using-persistent-surveillance-watch-watchmen.

7. Jim Harper, *'Pre-Search' is Coming to U.S. Policing,* REASON (Aug. 30, 2016), http://reason.com/archives/2016/08/30/get-ready-for-pre-search.

8. U.S. CONST. amend. IV.

9. Harper, *supra* note 7.

10. DAVID GRAY, THE FOURTH AMENDMENT IN AN AGE OF SURVEILLANCE 10 (2017).

11. Harper, *supra* note 7.

12. U.S. CONST. amend. IV.

13. Harper, *supra* note 7.

been likened to "…opening up a murder mystery in the middle, and you need to figure out what happened before and after."[14] Essentially, surveillance conducted through aircraft with the capability of gathering images and videos across blocks or miles may capture the movements of those under no criminal activity in a dragnet fashion.[15] These videos and images could be used by law enforcement to track individuals moving in public or reviewed if a crime occurs in an area under surveillance. Advanced surveillance also leads to privacy concerns for those moving about in public from their homes, work, or other activities who will inevitably be recorded by surveillance aircraft.

Although privacy is a concept difficult to define, its importance cannot be understated. Most definitions of privacy revolve around the ability to maintain boundaries and limitations on access to the self.[16] Scholars have defined privacy as the ability of individuals to define themselves.[17] It allows individuals to protect space from the burdens of social interactions and control what information about oneself is made known to others.[18] Glenn Greenwald, attorney and journalist, highlighted these privacy concerns when criticizing the mass data collection by the National Security Administration (NSA).[19] Greenwald offers the example of an individual calling a Human Immuno-Deficiency Virus (HIV) clinic or suicide prevention hotline.[20] There is nothing criminal about either of these actions. Yet, these are the types of actions that most individuals would want to keep private.[21] Public movements by individuals can reveal a wealth of knowledge about a person. Similarly, aerial surveillance could reveal an individual's visits to a doctor's office, mental health professional, an HIV clinic, or another similarly stigmatized activity. Visiting one of these institutions would not normally be considered criminal or suspicious, yet most individuals would wish to keep these visits private.[22] However, these movements are at risk for being tracked and recorded by sophisticated aerial cameras. This suggests the most pressing of privacy concerns from individuals.

This leads to the question, does the Fourth Amendment provide any protection against mass aerial surveillance by manned aircraft? The United States Supreme Court has yet to address the issue of dragnet style surveillance conducted by aircraft.[23] Yet, the Fourth Amendment may only provide limited

14. Timberg, *supra* note 3.

15. Craig Timberg, *Surveillance Planes Spotted in the Sky for Days After West Baltimore Rioting*, WASH. POST (May 5, 2015), https://www.washingtonpost.com/business/technology/surveillance-planes-spotted-in-the-sky-for-days-after-west-baltimore-rioting/2015/05/05/c57c53b6-f352-11e4-84a6-6d7c67c50db0_story.html?utm_term=.dd4b9781c6aa.

16. GRAY, *supra* note 10, at 6.

17. GRAY, *supra* note 10, at 7 (citing to Julie Cohen, *What Privacy Is For*, 126 HARV. L. REV. 1904, 1906 (2013)).

18. *Id*.

19. Kathleen Miles, *Glenn Greenwald On Why Privacy Is Vital, Even If You 'Have Nothing to Hide,'* HUFFINGTON POST (July 20, 2014), http://www.huffingtonpost.com/2014/06/20/glenn-greenwald-privacy_n_5509704.html.

20. *Id*.

21. *Id*.

22. *Id*.

23. Harper, *supra* note 7.

protections against this form of surveillance necessitating legislatures to create new laws to protect individual privacy.[24]

B. Current Use of Mass Aerial Surveillance

Until fairly recently, there was little to no knowledge about the prevalence of mass aerial surveillance.[25] The practice has grown more commonplace as major cities in the United States have utilized aerial flights to record the happenings of large cities.[26] Specifically, Persistent Surveillance Systems (PSS) has become the major provider of aerial surveillance services to cities and municipalities across the country.[27] Ross McNutt, founder of PSS, originally developed the technology for military use in Iraq in 2006, which was intended to prevent enemy combatants from planting roadside bombs.[28] McNutt altered the technology for commercial use domestically in 2007.[29] PSS operates through the use of a Cessna airplane, or other similar aircraft, equipped with an ultra-wide angle camera to provide detailed aerial surveillance.[30] The airplane then flies over a city for hours at a time surveilling the landscape below with a 192 megapixel camera.[31] The executive summary of PSS' surveillance operations over Baltimore described the current surveillance technology as "limited."[32] The report denied that individuals could be identified by PSS cameras.[33] Even cars cannot be identified by make or model, much less license plates.[34] However, law enforcement can review PSS footage and trace the path of perpetrators leaving crime scenes which can be cross referenced with more localized public surveillance if available.[35] PSS has advertised its services as being able to detect spikes in crime, gang activity, and has even claimed that its high tech cameras "can tell the entire story of crime, providing the information investigators need to complete an investigation."[36] The capability to track patterns and cross reference footage with other information is a specific concern highlighted by privacy advocates made possible by the use of mass aerial surveillance.[37] The technology used by PSS has the ability to monitor multiple areas simultaneously and to be viewed in real time with only a three second

24. *Id*.
25. Reel, *supra* note 2.
26. *Id*.
27. *Id*.
28. *Id*.
29. *Id*.
30. Timberg, *supra* note 15.
31. *Id*.
32. *Problems with Persistent Surveillance*, BALT. SUN (Feb. 14, 2017, 11:02 AM) http://www.baltimoresun.com/news/opinion/editorial/bs-ed-bpd-surveillance-20170214-story.html.
33. *Id*.
34. *Id*.
35. *Id*.
36. *Wide Area Surveillance*, PERSISTENT SURVEILLANCE SYS. (last visited Mar. 10, 2018), https://www.pss-1.com/hawkeye-ii.
37. Harper, *supra* note 7 ("But the technology collects images of everyone and everything. From people in their backyards to anyone going from home to work, to the psychologist's or marriage counselor's office, to meetings with lawyers or advocacy groups, and to public protests. It's a powerful tool for law enforcement—and for privacy invasion.").

delay.[38] However, advancements in technology may make even more advanced imaging of persons and vehicles possible in the future.

The widespread surveillance of Baltimore was not controversial solely due to the technology used, but also because of the clandestine partnership between the city and PSS. Many members of the Baltimore community were shocked to learn that there was aerial surveillance of this magnitude taking place in their community.[39] TJ Smith, Baltimore Police Spokesman, was unable to explain how or even if the surveillance program had been revealed to city officials and citizens.[40] He maintained that the program was not meant to be a "secret spy program" but rather to serve the goal of public safety.[41]

Baltimore is not the only city in which PSS has provided services.[42] Since the technology was modified for domestic use, it has also been tested in Los Angeles.[43] Despite the high-tech nature of the surveillance, the public was not notified until a year after the surveillance testing began.[44] PSS also provided traffic-flow analysis for municipalities, surveillance for federal wildlife services, and border patrol.[45] It has also provided surveillance for events such as NASCAR races and Ohio State University football games.[46]

C. Predictive Crime Control Model

The increasing use of aerial surveillance by law enforcement is no surprise, as such technology is becoming more readily available and affordable in the form of both manned aircraft and unmanned drones.[47] Law enforcement is willing, and, in many cases, has embraced surveillance technology to police in a more predictive, pre-crime manner.[48] Since the September 11th attacks, better preemption techniques have become a priority for law enforcement worldwide. Law enforcement has worked to respond in a pre-emptive manner through the use of intelligence-led strategies and technologies.[49] The danger of pre-search becomes more prevalent as law enforcement shifts to more preemptive strategies

38. *Capability*, PERSISTENT SURVEILLANCE SYS. (last visited Mar. 10, 2018), https://www.pss-1.com/hawkeye-ii—-capability.

39. Kevin Rector, *Baltimore's Aerial Surveillance Program Goes Way Beyond CitiWatch, Experts Say*, BALT. SUN (Aug. 25, 2016, 8:37 PM), http://www.baltimoresun.com/news/maryland/crime/bs-md-ci-surveillance-differences-20160825-story.html.

40. *Id.*

41. *Id.*

42. Cyrus Farivar, *Persistent Surveillance Systems Has Been Watching Baltimore for Months*, ARS TECHNICA (Aug. 24, 2016, 1:12 PM), https://arstechnica.com/tech-policy/2016/08/persistent-surveillance-systems-has-been-watching-baltimore-for-months/.

43. *Id.*

44. Timberg, *supra* note 3.

45. Reel, *supra* note 2.

46. Timberg, *supra* note 15.

47. Michaelle Bond, *Drones a Benefit for Law Enforcement, but Raise Concerns*, GOV TECH (Aug. 10, 2015), http://www.govtech.com/dc/articles/Drones-a-Benefit-for-Law-Enforcement-but-Raise-Concerns.html.

48. Rosamand van Brakel and Paul De Hert, *Policing, Surveillance and Law in a Pre-Crime Society: Understanding the Consequences of Technology Based Strategies*, CAHIERS POLITIESTUDIES 163, 165 (2011).

49. *Id.* at 168 (defining intelligence-led as "a strategic, future-oriented and targeted approach to crime control, focusing upon the identification, analysis, and 'management' of persisting and developing 'problems' or 'risks' (which may be particular people, activities and areas), rather than on the reactive on investigation and detection of individual crimes.").

of policing through the aid of surveillance aircraft and drones. Police departments have already adopted the use of advanced technology for use in dragnet style investigation.[50] This technique has been utilized in DNA dragnet investigations where DNA has been collected from a sexual assault and/or murder victim and police are trying to identify the perpetrator.[51] Law enforcement will collect samples from those who live or work around the scene.[52] The Supreme Court recently endorsed a similar approach in *Maryland v. King* holding that the analysis of a buccal swab from a defendant charged with first and second degree assault, which ultimately linked his DNA to a sexual assault unrelated to the current charges, was a reasonable booking procedure under the Fourth Amendment and therefore not a search.[53] Predictive and dragnet methods of crime control are only becoming more common and even sanctioned by the Supreme Court.[54] Aerial surveillance can be an important tool to meet the goals of preemptive crime control and therefore it may become a common tool in the future. This makes it even more necessary to implement the proper legal constraints on pre-search technology and surveillance.

III. ANALYSIS

The use of technology that may allow for dragnet style surveillance over swaths of geography and people elicits a variety of privacy concerns. While the courts have addressed the use of aerial surveillance in regard to ongoing investigations and of specific private property or individuals,[55] dragnet style surveillance of individuals on both public and private land has yet to be challenged.[56]

The Court has applied Fourth Amendment protections to emerging technologies.[57] Yet, precedent allows for law enforcement to utilize aerial surveillance relatively unrestricted even above private property.[58] Presently, no court in the United States has held the use of video cameras by law enforcement to surveil activity on public property to be an unreasonable search.[59] Indeed, it is understood that individuals have little to no expectation of privacy while in public. Some argue that mounted surveillance cameras across a town are

50. Heather Kelly, *Police Embracing Tech That Predicts Crimes*, CNN (May 26, 2014, 2:08 PM), https://www.cnn.com/2012/07/09/tech/innovation/police-tech/index.html.

51. Sepideh Esmaili, *Searching for a Needle in a Haystack: The Constitutionality of Police DNA Dragnets*, 82 CHI.-KENT L. REV. 495, 498 (2007).

52. *Id.*

53. Maryland v. King, 569 U.S. 435, 435 (2013).

54. Ryan Gallagher, *Supreme Court Says Americans Can't Challenge "Dragnet Surveillance" Law*, SLATE (Feb. 26, 2013, 3:23 PM), http://www.slate.com/blogs/future_tense/2013/02/26/fisa_supreme_court_says_americans_don_t_have_standing_to_challenge_surveillance.html.

55. Kyllo v. United States, 553 U.S. 27, 33 (2001); United States v. Jones, 451 F. Supp. 2d 71, 88 (2006); Dow Chem. Co. v. United States, 476 U.S. 227 (1986).

56. Marc Jonathan Blitz, *The Fourth Amendment Future of Public Surveillance: Remote Recording and Other Searches in Public Space*, 63 AM. U.L. REV. 21, 86 (2013).

57. United States v. Jones, 565 U.S. 400 (2012); *Kyllo*, 533 U.S. at 27.

58. *See* California v. Ciraolo, 476 U.S. 207 (1986); Florida v. Riley 488 U.S. 445 (1989) (upholding the use of aircraft over private property).

59. *Guidelines for Public Video Surveillance: A Guide to Protecting Communities and Preserving Civil Liberties*, THE CONSTITUTION PROJECT (2006).

pervasive enough to provide police a complete visual record of anyone who moves about town and would not offend the Fourth amendment under the public observation doctrine.[60] Some circuits have even gone as far as to conclude that long term surveillance of a suspect's own property for up to two weeks is permissible as long as the camera recorded only what could already be observed by someone on a public road.[61]

Some have already raised concerns about the use of planes equipped with aerial surveillance technology.[62] Courts will likely encounter legal challenges as this form of surveillance is adopted by law enforcement. However, existing legal frameworks, such as the *Katz* test,[63] may prove insufficient to address privacy concerns raised by the public. Although the Court has expressed willingness to provide Fourth Amendment protections to unreasonable searches and seizures accomplished through new technology,[64] protecting individuals from mass aerial surveillance through the judicial branch would require an unlikely revolution in Fourth Amendment jurisprudence.

A. The Reasonable Expectation of Privacy and Existing Legal Framework

In 1967, the Supreme Court announced its opinion in *Katz v. United States*.[65] *Katz* introduced the formulation for what would become known as the "reasonable expectation of privacy" test.[66] This test is utilized to determine whether a government intrusion constitutes a "search" under the Fourth Amendment.[67] Prior to *Katz*, the Court had adopted a narrow understanding of the Fourth Amendment in *Olmstead v. United States*.[68]

In *Olmstead*, the Court was faced with the constitutionality of electronic wiretapping utilized without a warrant.[69] This case was one of the first instances in which the Court addressed whether the Fourth Amendment's protections extended to electronic surveillance.[70] The issue became increasingly important with technological advances that led to the invention of the telephone, microphone, and dictograph.[71] In *Olmstead*, the Court held that there had been no constitutional "search" because law enforcement had not physically

60. GRAY, *supra* note 10, at 83 ("Thus, no matter how much information police may gather using visual surveillance technologies, they cannot violate reasonable expectations of privacy so long as every frame and image falls within the bounds of public observation doctrine.").

61. Orin Kerr, *Ten Weeks of Public Camera Surveillance Not A Search, 6th Circuit Ruless*, WASH. POST (Feb. 8, 2016), https://www.washingtonpost.com/news/volokh-conspiracy/wp/2016/02/08/ten-weeks-of-public-camera-surveillance-not-a-search-6th-circuit-rules/.

62. Timberg, *supra* note 15.

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

64. *Kyllo*, 553 U.S. 27; Jones, 565 U.S. 400; *Dow Chem. Co*., 476 U.S. 227.

65. *See Katz*, 389 U.S. 347 (establishing the general standard).

66. *Id*.

67. Peter Winn, *Katz and the Origins of the "Reasonable Expectation of Privacy" Test*, 40 MCGEORGE L. REV. 1 (2009).

68. Olmstead v. United States, 277 U.S. 438, 466 (1928).

69. *Id*. at 455–56.

70. *See id.* at 466 ("We think, therefore, that the wire tapping here disclosed did not amount to a search or seizure within the meaning of the Fourth Amendment.").

71. Winn, *supra* note 67.

trespassed on defendant's property to carry out the wiretap.[72] This holding established an incredibly narrow reading of the Fourth Amendment which focused on physical intrusion as a "search."[73] This view of a "search" would prove to be temporary as the issue would later be revisited in *Katz*.[74]

In *Katz*, the majority opinion announced a new understanding of the Fourth Amendment based on privacy.[75] This diverged significantly from the trespass-oriented approach of *Olmsted*.[76] The majority opinion in *Katz* held that the Fourth Amendment protects individual privacy against certain kinds of governmental intrusion.[77] It also held that the Fourth Amendment protects people, not places.[78] However, the majority did not provide guidance in which to evaluate how the right to privacy is to be determined.[79] It is Justice Harlan's concurrence that provided the framework for determining if a privacy right exists.[80] Justice Harlan explained that the rule has a twofold requirement.[81] First, "that a person have exhibited an actual (subjective) expectation of privacy."[82] Second, "that the expectation be one that society is prepared to recognize as 'reasonable.'"[83] Justice Harlan's "reasonable expectation of privacy" test became the standard in Fourth Amendment jurisprudence, especially in cases involving new technology.[84] This framework for evaluating whether there is a reasonable expectation of privacy provides courts the flexibility to assess both sides of a dispute.[85] This test has been frequently used in cases involving searches of electronics. It continues to be an important consideration in Fourth Amendment cases involving the use of technology.

However, the *Katz* test has not been without criticism. Critics of the Katz test have pointed out that it relies entirely on circular reasoning.[86] This critique claims that it is difficult to assert a privacy interest because an individual only has a reasonable expectation of privacy if the Court decides that the area should benefit from Fourth Amendment protection.[87] This results in the framework to be subjectively applied, and at times unreliable, as it can be difficult to determine

72. *Olmsted*, 277 U.S. at 466.

73. *See id.* at 466 ("We think, therefore, that the wire tapping here disclosed did not amount to a search or seizure within the meaning of the Fourth Amendment.").

74. Winn, *supra* note 67.

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

76. *Olmsted*, 277 U.S. at 466.

77. *Katz*, 389 U.S. at 350.

78. *Id.* at 351.

79. Winn, *supra* note 67, at 6 ("While announcing a new understanding of the Fourth Amendment based on a right of privacy, [the Katz majority opinion] says nothing about how this newfound right is to be determined.").

80. *Id.* at 361.

81. *Id.*

82. *Id.*

83. *Id.*

84. *See, e.g.*, Kyllo v. United States, 553 U.S. 27, 33 (2001); United States v. Jones, 451 F. Supp. 2d 71, 88 (2006); Dow Chem. Co. v. United States, 476 U.S. 227 (1986) (utilizing Harlan's reasonable expectation of privacy test).

85. Winn, *supra* note 67.

86. Orin S. Kerr, *The Fourth Amendment and New Technologies: Constitutional Myths and the Case for Caution*, 102 MICH. L. REV. 801, 808 (2004).

87. *Id.*

which individuals will benefit from the protection.[88] Therefore, relying on *Katz* to provide adequate protections from dragnet style, aerial surveillance may similarly provide unreliable protection.

B. Previous Cases Addressing the Use of Aerial Surveillance

There have only been a few cases in which the Court has explicitly addressed whether aerial surveillance constituted a search.[89] Each of these cases involved the use of aerial surveillance during an ongoing investigation.[90] None of these cases involved the use of dragnet style aerial surveillance.[91] These cases may shed some light about the approach the Court will take regarding aerial surveillance.

1. Dow Chemical Company v. United States

The Court addressed the issue of aerial surveillance in *Dow Chemical Company v. United States*.[92] Dow Chemical operated a chemical plant in Midland, Michigan and maintained thorough security around the perimeter of the plant complex barring ground-level public view of the complex.[93] However, portions of manufacturing equipment were left uncovered and visible from the air.[94] The plant never attempted to conceal the manufacturing equipment from aerial view.[95]

The Environmental Protection Agency ("EPA") employed a commercial aerial photographer to take photographs of the facility with a precision aerial mapping camera.[96] The photos were taken in navigable airspace from altitudes of 12,000, 3,000, and 1,200 feet.[97] The EPA did so without an administrative warrant.[98] Dow filed suit alleging the EPA violated the Fourth Amendment as well as the EPA's investigative authority.[99] The District Court held that the EPA's actions did constitute a search after applying the *Katz* test.[100] The Court noted that Dow had manifested a reasonable expectation of privacy in its

88. *See id.* at 126 ("This dynamic is relatively rare, however. New technologies more commonly expose information that in the past would have remained hidden, resulting in meager Fourth Amendment protection in new technologies.").

89. *See generally* Gregory McNeal, *Drones and Aerial Surveillance: Considerations for Legislatures*, BROOKINGS (Nov. 2014) https://www.brookings.edu/research/drones-and-aerial-surveillance-considerations-for-legislatures/ ("The U.S. Supreme Court addressed the issue of aerial surveillance in a series of cases in the late 1980's . . . .").

90. *See infra* Part III.B.1–3; *see also*, McNeal, *supra* note 89.

91. *See infra* Part III.B.1–3.

92. *See generally* Dow Chem. Co. v. United States, 476 U.S. 227 (1986) (addressing the issue of aerial surveillance).

93. *Id.* at 229.

94. *See id.* ("Dow has not undertaken, however, to conceal all manufacturing equipment within the complex from aerial views.").

95. *Id.*

96. *Id.* at 232.

97. *Id.* at 229.

98. *Id.*

99. *Id.* at 230.

100. Dow Chem. Co. v. United States, 536 F.Supp. 1355, 1358 (E.D. Mich. 1982).

exposed areas because it had intentionally surrounded them with buildings and other enclosures.[101]

The Court of Appeals reversed and the Supreme Court affirmed this judgment.[102] The Supreme Court found that open areas of the industrial plant were comparable to open fields, which the Court described as being "open to the view and observation of persons in aircraft lawfully in the public airspace immediately above or sufficiently near the area for the reach of cameras."[103] Further, the Court concluded that plant structures which spanned 2,000 acres were not comparable to the curtilage of a dwelling for the purposes of aerial surveillance.[104] This was an important distinction because the Court has held that unlike a private dwelling, commercial property does not benefit from the significant expectation of privacy that homeowners maintain.[105] Therefore, the Court held that there was no Fourth Amendment violation.[106] *Dow* illustrated the willingness of the Court to apply the *Katz* test to cases involving aerial surveillance. It also indicated that homeowners may have a higher expectation of privacy from aerial surveillance than commercial property.

2. California v. Ciraolo

The same year that the Court addressed *Dow*, it also ruled on another case regarding aerial surveillance. Unlike *Dow*, *California v. Ciraolo* involved aerial observation of a residential backyard.[107] In *Ciraolo*, law enforcement received an anonymous tip that defendant was growing marijuana in his backyard.[108] Officers were unable to observe the backyard from ground level because it was fully enclosed by a six foot tall outer fence and a ten foot tall inner fence.[109] Investigating officers secured a private airplane and flew over the home at an altitude of 1,000 feet in navigable airspace.[110] This flight allowed the officers, both of which had been trained in marijuana detection, to identify marijuana plants in the backyard growing at heights of 6-8 feet.[111] The officers photographed the backyard with a standard 35 millimeter camera.[112]

Based on these observations and photographs, officers obtained a search warrant for the property six days later.[113] The search warrant was executed and the marijuana plants were seized.[114] The Defendant filed a motion to suppress

101. *Id.* at 1364–66.
102. *Dow Chem. Co.*, 476 U.S. at 239.
103. *Id.*
104. *Id.*
105. *Id.* ("We emphasized that unlike a homeowner's interest in his dwelling, '[t]he interest of the owner of commercial property is not one in being free from any inspections.'" (quoting Donovan v. Dewey, 452 U.S. 594, 599 (1981))).
106. *Id.* at 239.
107. California v. Ciraolo, 476 U.S. 207, 208 (1986).
108. *Id.* at 209.
109. *Id.*
110. *Id.*
111. *Id.*
112. *Id.*
113. *Id.*
114. *Id.* at 210.

the evidence of the search.[115] Upon review, the Supreme Court held that the warrantless observation of the individual's fenced-in backyard did not violate the Fourth Amendment.[116] In its analysis, the Court relied on the *Katz* test.[117] The Court found that the first prong of the analysis, asking whether the defendant manifested a subjective expectation of privacy, was unclear in this case.[118] Therefore, it turned its analysis to the second prong asking whether an expectation of privacy is reasonable.[119] The Court found that law enforcement observed the backyard from navigable airspace in a physically nonintrusive manner.[120] Furthermore, the marijuana was observable to the naked eye.[121] The Court emphasized that "[a]ny member of the public flying in this airspace who glanced down could have seen everything that these officers observed."[122] Therefore, the Court concluded that the defendant's expectation that his backyard would be free from observation was unreasonable.[123]

In this case, the Court found that although law enforcement was observing a residential property, there was not a reasonable expectation of privacy from surveillance via airplane.[124] This case illustrated that individuals on their own property may not be granted Fourth Amendment protection from pre-search surveillance.

3. Florida v. Riley

The Court reached a similar holding in *Florida v. Riley*.[125] The facts of the case mirrored those in *Ciraolo*.[126] The defendant had constructed a greenhouse enclosure behind his mobile home located on about five acres of property.[127] The greenhouse was located about ten to twenty feet behind the mobile home and two sides of it were enclosed.[128] The other two sides were open but obstructed by trees, bushes, and the mobile home.[129] The greenhouse was covered by roofing panels, some of which were translucent or opaque.[130] Some panels were missing altogether.[131]

115. *Id.*
116. *Id.* at 215.
117. *Id.* at 211.
118. *Id.* at 211–12 ("Yet a 10-foot fence might not shield these plants from the eyes of a citizen or a policeman perched on the top of a truck or a two-level bus. Whether respondent therefore manifested a subjective expectation of privacy from all observations of his backyard, or whether instead he manifested merely a hope that no one would observe his unlawful gardening pursuits, is not entirely clear in these circumstances.").
119. *Id.* at 212.
120. *Id.* at 213.
121. *Id.*
122. *Id.* at 213–14.
123. *Id.*
124. *Id.* at 214.
125. Florida v. Riley, 488 U.S. 445, 448 (1989).
126. *Id.* at 449 ("We agree with the State's submission that our decision in *California v. Ciraolo*, 476 U.S. 207 (1986), controls this case.").
127. *Id.* at 448.
128. *Id.*
129. *Id.*
130. *Id.*
131. *Id.*

Law enforcement received an anonymous tip that defendant was growing marijuana on his property.[132] An attempt was made to observe the property from ground level but the contents of the greenhouse were not seen.[133] Therefore, law enforcement flew over the property in a helicopter about 400 feet above the property.[134] With his naked eye, the investigating officer was able to see through the openings of the roof and sides of the greenhouse.[135] He identified what he believed to be marijuana plants growing inside the greenhouse.[136]

Based on these observations, law enforcement obtained a warrant to search the property.[137] The property was then searched, marijuana plants were seized, and the defendant was charged with possessing marijuana.[138] The trial court granted his motion to suppress, which was subsequently reversed by the Florida Court of Appeals.[139] The Florida Supreme Court quashed the decision by the Court of Appeals and reinstated the suppression order.[140] Upon review by the Supreme Court of the United States, the Court held that there was no Fourth Amendment violation.[141] The Court noted that the decision in *Ciraolo* controlled.[142] The Court reasoned that just as police were free to inspect the backyard from a ground level vantage point, they are also free to inspect the property from an aircraft flying in navigable airspace.[143] The Court noted, just as it did in *Ciraolo*, that in a time where private and commercial flights are common occurrences, it would be unreasonable for the defendant to expect that his marijuana plants were constitutionally protected from observation by the naked eye at an altitude of about 500 feet.[144]

As in *Ciraolo*, the Court emphasized the routine nature of aerial flights and the fact that the observation was made while in navigable airspace.[145] The Court did note that its decision may have been different if the aircraft was in airspace in which it was prohibited by law or regulation.[146] This decision solidified the Court's approach to aerial surveillance as fairly permissive, even if the aircraft is surveilling private property.[147]

If courts apply the holding in *Riley* and *Ciraolo* to potential challenges to pre-search via aerial surveillance, surveillance aircraft may have wide latitude to record individuals on private property. Both of these cases allowed for law

132. *Id.*
133. *Id.*
134. *Id.*
135. *Id.*
136. *Id.* at 448.
137. *Id.* at 448–49.
138. *Id.* at 449.
139. *Id.*
140. *Id.*
141. *Id.* at 452.
142. *Id.* at 449.
143. *Id.* at 449–450.
144. *Id.* at 450.
145. *Id.*
146. *Id.* at 451.
147. *See generally*, Florida v. Riley, 488 U.S. 445 (1989) (providing that items of curtilage that are reasonably visible from public airspace may not be protected under the Fourth Amendment).

enforcement to observe private property from a vantage point in the sky.[148] However, the courts will have to evaluate the use of aerial surveillance among other factors. Additional factors to be considered in the Fourth Amendment context include the use of evolving technology such as thermal-imaging and Global Positioning Service (GPS) tracking.[149]

C. Previous Cases Applying the Fourth Amendment to Evolving Technology

1. Kyllo v. United States

Decades after the opinion in *Katz* had been announced, the United States Supreme Court continued to grapple with the use of surveillance technology and application of the Fourth Amendment. In *Kyllo*, the Court addressed the issue of whether the use of a thermal-imaging device aimed at a private home from a public street to detect heat within the home constituted a "search" under the Fourth Amendment.[150] Law enforcement suspected that petitioner Danny Kyllo had been growing marijuana plants in his residence.[151] Indoor cultivation of marijuana typically requires the use of high-intensity lamps. Therefore, law enforcement utilized thermal imagers to scan Kyllo's home.[152] They scanned his home from their vehicle across the street from both the front and the back of the house.[153] The scan revealed the area over the garage was relatively hot compared to the rest of the home and the other homes in the neighborhood.[154] Law enforcement officials concluded that Kyllo had been using halide lights to grow marijuana. Based on the results of the thermal imaging scan, tips from informants, and utility bills, law enforcement secured a search warrant from a Federal Magistrate Judge.[155] Officials searched the home and found an indoor marijuana growing operation that consisted of hundreds of plants.[156] Kyllo unsuccessfully moved to suppress the evidence seized from his home.[157] The decision denying his motion for suppression was challenged and the Supreme Court granted certiorari.[158]

The Court recognized the impact of technology on Fourth Amendment issues in the opinion in *Kyllo*.[159] The Court held that when the government uses a device that is not in general public use to explore the private details of a home that previously would not be known without physical intrusion, the surveillance

148. California v. Ciraolo, 476 U.S. 207, 213–14 (1986); *Riley*, 488 U.S. at 450.
149. Kyllo v. United States, 553 U.S. 27, 33 (2001); United States v. Jones, 451 F. Supp. 2d 71, 88 (2006).
150. *Kyllo*, 553 U.S. at 29 (2001).
151. *Id.*
152. *Id.*
153. *Id.* at 30.
154. *Id.*
155. *Id.*
156. *Id.*
157. *Id.*
158. *Id.* at 31.
159. *Id.* at 33 (stating "We have previously reserved judgement as to how much technological enhancement of ordinary perception from such a vantage point, if any, is too much.").

qualifies as a "search" and is presumptively unreasonable without a warrant.[160] The Court noted that while the *Katz* test has received criticism for being circular and subjective, to withdraw the protection of a reasonable expectation of privacy would permit police technology to "erode the privacy guaranteed by the Fourth Amendment."[161] The Court found that the ability of the thermal imaging technology to obtain information about the inside of the home that would not otherwise be available without entering the home constituted an "intrusion into a constitutionally protected area" and therefore was a search.[162] The Court's analysis concentrated on this point as well as the fact that the technology being utilized was not available to the public for general use.[163]

The Court not only held that the use of thermal imaging constituted a "search" but also commented on the emergence of new surveillance technology. The opinion noted that although the technology utilized in this case was "relatively crude", the adopted rule must take into account more sophisticated technology already in use or development.[164] The Court recognized the impact that emerging technology can have on surveillance, allowing law enforcement to search areas that once could only be searched by physical inspection. The *Katz* test proved to be an important analytic tool in order to assess whether new surveillance methods constitute a "search."

Kyllo may be a case instructive for the courts when addressing the issue of pre-search surveillance. The technology used in aerial surveillance is often expensive and not generally available to the public.[165] Therefore, courts may reason that because the advanced cameras and Cessna planes that are used by or contracted for by law enforcement are generally not available to the public, law enforcement should obtain a warrant before utilizing these surveillance methods. Courts must also consider whether law enforcement would have access to what they are surveilling without a physical intrusion.[166] This factor may be one of many utilized by courts to evaluate whether the use of pre-search aerial surveillance constitutes a search under the Fourth Amendment.

2. United States v. Jones

In 2012, the Court addressed the use of GPS tracking by law enforcement. In *United States v. Jones*, the Federal Bureau of Investigation ("FBI") and Metropolitan Police Department began investigating Antoine Jones and suspected him of trafficking narcotics.[167] Based on their investigation, law enforcement applied for a warrant authorizing the use of an electronic GPS tracking device on a vehicle registered to Jones's wife.[168] The court granted the

160. *Id.* at 39.
161. *Id.* at 34.
162. *Id.*
163. *Id.*
164. *Id.* at 36.
165. *See* Timberg, *supra* note 3 (explaining the use of an ultra-wide angle lens camera equipped to Cessna airplanes to provide detailed surveillance footage).
166. *Kyllo*, 553 U.S. 27 at 34.
167. United States v. Jones, 565 U.S. 400, 402 (2012).
168. *Id.*

warrant and authorized the installation of the device within ten days in the District of Columbia.[169] However, the agents installed the GPS tracking device on the eleventh day, and in Maryland, which did not comply with the time or geographic frame approved by the court.[170] Law enforcement tracked the vehicle's location for a total of twenty-eight days.[171]

Based on this evidence and the previous investigation, the government obtained a multiple-count indictment. Jones filed a motion to suppress the evidence obtained by the GPS device.[172] The District Court granted the motion in part, suppressing the evidence obtained by the GPS tracking device obtained while the vehicle was parked in the garage adjoining the Jones' home.[173]

The United States Supreme Court held that the placement of the GPS device to Jones' vehicle constituted a search under the Fourth Amendment.[174] While the Court—particularly Justice Scalia—relied heavily on the *Katz* analysis as applied in *Kyllo*, it also utilized the trespassory-based approach to the Fourth Amendment used in the majority opinion in *Jones*.[175] The trespassory-based approach to the Fourth Amendment was articulated in *Olmstead* and had been seemingly overruled in *Katz*.[176] However, Justice Scalia viewed *Katz* as a mere supplement to the trespassory-based approach to the Fourth Amendment.[177] Under this approach, the Court found that the vehicle was an "effect" under the language of the Fourth Amendment and when the government intruded on that effect to install a GPS, a search had occurred.[178]

This case reinvigorated the property-based approach of Fourth Amendment analysis.[179] Justice Scalia was adamant that the trespassory-based approach was not overruled, but merely supplemented by the *Katz* framework.[180] However, not all of the Justices adopted Scalia's view of the Fourth Amendment. Justice Alito's concurrence argued that *Katz* alone was the appropriate method to resolve *Jones*.[181] Justice Alito found it inappropriate to apply the trespassory-approach in modern times.[182] Specifically, he argued that traditional common law analyses based on trespass of property would not apply to electronic surveillance because it improperly places significance on the physical placement

169. *Id.* at 403.
170. *Id.*
171. *Id.*
172. *Id.*
173. United States v. Jones, 451 F. Supp. 2d 71, 88 (2006).
174. *Jones*, 565 U.S. at 400.
175. *Id.* at 405–07.
176. MICHAEL C. GIZZI & R. CRAIG CURTIS, THE FOURTH AMENDMENT IN FLUX: THE ROBERTS COURT, CRIME CONTROL, AND DIGITAL PRIVACY 94 (2016).
177. *Id.*
178. *Jones*, 565 U.S. at 404–05 ("Where, as here, the Government obtains information by physically intruding on a constitutionally protected area, such a search has undoubtedly occurred.").
179. *See* Herbert W. Titus & William J. Olson, *United States v. Jones: Reviving the Property Foundation of the Fourth Amendment*, 3 J. L., TECH. & INTERNET 243 (2012) (analyzing how the property-based approach of the Fourth Amendment was revived).
180. GIZZI & CURTIS, *supra* note 176.
181. *Jones*, 565 U.S. at 423.
182. *Id.* at 420 ("But it is almost impossible to think of late-18th-century situations that are analogous to what took place in this case. (Is it possible to imagine a case in which a constable secreted himself somewhere in a coach and remained there for a period of time in order to monitor the movements of the coach's owner?)").

of the GPS to the vehicle, rather than the long-term tracking capabilities of the GPS.[183] He pointed out that the trespassory-approach utilized by the majority opinion was insufficient to protect individuals from all forms of long-term GPS monitoring.[184] Alito also argued how application of the majority's rule utilizing the trespassory test could lead to contradictory results.[185] For example, the Fourth Amendment would apply when law enforcement attached a GPS to a vehicle and monitored it for a short time.[186] Yet, under the same framework it would not apply to long term law enforcement observation through unmarked cars or aircraft.[187] The holding of the majority opinion seemingly left an opening for law enforcement to continue to track individuals on an extended basis free from Fourth Amendment constraints.[188] Law enforcement would be able to surveil individuals as long they did not commit a physical trespass.

Justice Sotomayor also issued a concurring opinion in *Jones*.[189] In her concurrence, Justice Sotomayor accepted both Scalia's trespassory-based analysis and *Katz*, but believed Scalia's formulation was too narrow.[190] She did accept that when government invades personal property, a search has occurred.[191] However, she characterized this as a "constitutional minimum", accepting that the Fourth Amendment protects people and property.[192] She also agreed that *Katz* enlarged the protections of the Fourth Amendment.[193] However, it did not diminish or replace the traditional trespassory-test that preceded it.[194] Her opinion argued that Alito's concurrence discounted the relevance of a physical intrusion in regards to a search.[195] Justice Sotomayor also made a strong case for digital privacy in her concurrence noting the impact that GPS tracking could have on an individual's public movements.[196] In her concurrence, she thought it appropriate to inquire whether a reasonable person

183. *Id.* at 424.

184. *Id.* at 425 ("By contrast, if long-term monitoring can be accomplished without committing a technical trespass—suppose, for example, that the Federal Government required or persuaded auto manufacturers to include a GPS tracking device in every car—the Court's theory would provide no protection.").

185. *Id.* at 424–25.

186. *Id.*

187. *Id.*

188. *Id.* at 425.

189. *Id.* at 413.

190. *Id.* at 413–18.

191. *Id.* at 413–14.

192. *Id.* at 414 ("By contrast, the trespassory test applied in the majority's opinion reflects an irreducible constitutional minimum: when the government physically invades personal property to gather information, a search occurs. The reaffirmation of that principle suffices to decide this case.").

193. *Id.*

194. *Id.*

195. *Id.* ("Justice Alito's approach, which discounts altogether the constitutional relevance of the Government's physical intrusion on Jones' Jeep, erodes that longstanding protection for privacy expectations inherent in items of property that people possess or control.").

196. *Id.* at 416 ("I would take these attributes of GPS monitoring into account when considering the existence of a reasonable societal expectation of privacy in the sum of one's public movements. I would ask whether people reasonably expect that their movements will be recorded and aggregated in a manner that enables the government to ascertain, more or less at will, their political and religious beliefs, sexual habits, and so on. I do not regard as dispositive the fact that the government might obtain the fruits of GPS monitoring through lawful conventional surveillance techniques.").

could believe that the aggregated surveillance would make it possible for the government to ascertain certain beliefs of the individuals surveilled.[197]

a. The Mosaic Theory

Interestingly, the Justices rejected the test applied by the D.C Circuit court in their review of *Jones*.[198] The D.C. Circuit Court applied an approach, which has subsequently been dubbed the mosaic theory.[199] Under this approach "searches can be analyzed as a collective sequence of steps rather than individual steps."[200] Orin Kerr has described this theory as analyzing all police actions over time as a combined "mosaic" of surveillance.[201] While individual steps viewed in isolation may not amount to a Fourth Amendment search, the "mosaic" of steps viewed cumulatively may be considered a search under the Fourth Amendment.[202] The D.C. Circuit used this framework and held that the GPS surveillance of the car's location over twenty-eight days aggregates into a collective sequence of surveillance which elicits Fourth Amendment protection.[203]

While the *Jones* opinion presented various theories of the Fourth Amendment, neither the majority nor concurrences wholeheartedly adopted the mosaic theory.[204] However, Justice Alito's acknowledgement that short term GPS monitoring of a car would not be considered a search while long term surveillance would, echoed at least some support for the mosaic theory.[205] The same can be said of Justice Sotomayor who also considered the aggregate of GPS surveillance in her concurrence.[206] She questioned whether "people reasonably expect that their movements will be recorded and aggregated in a manner that enables the government to ascertain, more or less at will, their political and religious beliefs, sexual habits, and so on."[207]

D. Application of the Katz Test to Aerial Surveillance

Courts have limited tools to limit the use of aerial surveillance.[208] The framework utilized by courts to analyze possible instances of pre-search by surveillance aircraft will depend on the individuals and locations surveilled.[209] While *Katz* has not been without criticism, it could be a helpful framework in

197. *Id*.
198. Orin S. Kerr, *The Mosaic Theory of the Fourth Amendment*, 111 MICH. L REV. 311, 313 (2012) (citing U.S. v. Maynard, 615 F.3d. 544, 562 (D.C. Cir. 2010)).
199. *Id*.
200. *Id*.
201. *Id*.
202. *Id*.
203. *Id*.
204. *Id*. (citing United States v. Jones, 565 U.S. 400 (2012)).
205. *Id*. (citing *Jones*, 565 U.S. at 419).
206. *Id*. (citing *Jones*, 565 U.S. at 415–16).
207. *Jones*, 565 U.S. at 415–16.
208. THE CONSTITUTION PROJECT, *supra* note 59, at 10.
209. Kerr, *supra* note 61.

limiting the possible abuses of aerial surveillance.[210] While the public observation doctrine would normally leave those public spaces without a viable Fourth Amendment challenge, the Court has at least expressed some limitations on "dragnet-type law enforcement practices."[211] Yet, the Court has recognized that even individuals in public places "are not shorn of all Fourth Amendment protection when they step from their homes onto the public sidewalks."[212] This holding may indicate that the Court would be willing to extend some Fourth Amendment protections from aerial surveillance to individual movements made in public.[213]

However, courts are unlikely to impose blanket restrictions on where an aircraft flies in navigable airspace.[214] Due to this reluctance it is unlikely that the use of surveillance aircraft would be halted. The most pressing concern will be when law enforcement may obtain or review recordings from surveillance aircraft.

E. Application of the Trespassory Test to Pre-Search Surveillance

Courts also have the option of applying a trespassory test when evaluating pre-search surveillance recordings.[215] However, a trespassory test to aerial surveillance would be difficult, if not impossible, to apply for several reasons. First, the Court recognized in *Causby* that airspace had become a "public highway."[216] In this case, Thomas Lee Causby, a chicken farmer, sued the United States government for flying aircraft 83 feet above his property.[217] The disturbance from the various aircraft was so startling that six to ten chicken each day would die from flying into walls.[218] Ultimately, the farm had to end its chicken business because so many chickens died.[219] Causby's predicament coincided with the growth of air transportation.[220] However, the Court held that land-owners still had ownership over "at least as much of the space above the ground as he can occupy or use in connection with the land."[221] The court reasoned that if land-owners did not have control over the "immediate reaches of the atmosphere" they could otherwise not plant trees, erect buildings, or build fences.[222]

Causby recognized that land-owners do indeed have some rights over the airspace above their property. Yet, it is not entirely clear just how far property rights extend into the air. The Federal Aviation Act has the sole authority to control "publicly owned" airspace, and has the exclusive power in determining

210. *Id.*
211. GRAY, *supra* note 10, at 84 (citing U.S. v. Knotts, 460 U.S. 276 (1983)).
212. Delaware v. Prouse, 440 U.S. 648, 663 (1979).
213. *Id.*
214. United States. v. Causby, 328 U.S. 256, 264 (1946).
215. *Id.*
216. *Id.*
217. *Id.* at 258.
218. *Id.* at 259.
219. *Id.*
220. *Id.* at 269.
221. *Id.* at 264.
222. *Id.*

the rules and requirements for its use.[223] Yet, property rights in the airspace directly above private property vary by jurisdiction. Yet, the Court recognized in *Ciraolo* and *Riley* that law enforcement is generally free to inspect even private property from navigable airspace.[224] The Court's ruling in *Dow* also indicates that open and non-residential areas may receive even less privacy protection.[225] Therefore, if courts choose to utilize a trespassory approach to address aerial surveillance, they would need to revisit *Causby* and consider how the use of airplanes has only continued to grow.[226] Given the uncertain nature of property rights in airspace, it is unlikely courts could create a practical standard utilizing the trespassory test.

Second, as noted in *Jones*, there has been significant disagreement on the Court about whether *Katz* eliminated the trespassory test of the Fourth Amendment or simply supplemented it with privacy component.[227] Courts could choose to adopt the approach articulated by Justice Sotomayor in *Jones*, framing the trespassory test as a constitutional minimum.[228] Under this reasoning, a trespass upon private airspace above a property would be indicative that an unreasonable search had taken place but not completely dispositive of an alleged unreasonable search.[229] This standard would require a showing that an aircraft travelled through airspace considered private property.[230] Yet, this would be a difficult showing to make considering the unclear nature of property rights in airspace.[231] This difficult showing assumes that a majority of the Justices would even be willing to apply a trespassory-based standard of the Fourth Amendment to airspace.[232] As illustrated by *Jones*, it is unlikely that a majority of the Justices would endorse this approach.[233]

F. Limitations of Fourth Amendment Protections against Mass Aerial Surveillance

The Court's existing jurisprudence suggests that the Fourth Amendment alone would not provide a strong shield against mass aerial surveillance.[234] In order for the Fourth Amendment to provide any substantial protections against the mass aerial surveillance, the Court would need to take a drastic new approach to the Fourth Amendment which has been previously been referred to as the mosaic theory.[235] As previously mentioned, *Jones* provided some limited

223. 49 U.S.C. § 40103 (2012).
224. Florida v. Riley, 488 U.S. 445, 450 (1989); California v. Ciraolo, 476 U.S. 207, 213–14 (1986).
225. Dow Chem. Co. v. United States, 476 U.S. 239 (1986).
226. *Causby*, 328 U.S. at 266–67.
227. United States v. Jones, 565 U.S. 400, 423 (2012).
228. *Id.*
229. *Id.*
230. *Id.*
231. *Causby*, 328 U.S. at 266–67.
232. *See Jones*, 565 U.S. 423 (demonstrating the difficulty in getting the Court to apply this doctrine).
233. *See id.* at 419 (stating "I would analyze the question presented in this case by asking whether respondent's reasonable expectations of privacy were violated by the long-term monitoring of the movements of the vehicle he drove.").
234. THE CONSTITUTION PROJECT, *supra* note 59, at 10.
235. Kerr, *supra* note 198, at 314.

support for this theory although no Justice wholeheartedly endorsed it.[236] Although this approach was endorsed by the D.C. Circuit in *U.S. v. Maynard*, the Supreme Court refused to adopt it in their review of *Jones*.[237] The mosaic theory would potentially revolutionize the Fourth Amendment and make it a strong shield against pervasive aerial surveillance.[238] Yet, it is unlikely that the court would ever adopt such a standard.[239] Even if courts chose to adopt the mosaic theory of the Fourth Amendment, there are obvious weaknesses with such an approach.

First, use of the mosaic theory would represent a major departure from the current Fourth Amendment analysis that may prove difficult for courts to apply.[240] Because the current approach views each step in sequential order, viewing steps in an aggregated manner to determine whether a search has taken place shakes the foundation of the current doctrine.[241] If the current approach was discarded, courts would need to consider previously settled questions of what the Fourth Amendment regulates, reasonableness, and remedies.[242] Furthermore, if the mosaic theory was adopted, courts would need to address new and challenging questions.[243] A framework for the mosaic theory would need to be developed, standards for aggregated conduct that constitutes a search would need to be implemented, and courts would have to grapple with whether warrants apply to mosaic searches and what must be done to satisfy the warrant requirement.[244] The mosaic theory raises these difficult questions, amongst others, that some have suggested would open a "Pandora's box" that would leave courts struggling to develop coherent and reasonable answers.[245]

Barring any upcoming judicial revolution in Fourth Amendment jurisprudence, the task of protecting individual privacy from the electric eye falls squarely on the legislature. Indeed, criticisms of the mosaic theory also suggest that legislatively created protections would provide superior privacy protections.

IV. RECOMMENDATIONS

While legislatures and courts have imposed some privacy limitations for the use of unmanned drones, manned aerial surveillance has been relatively unrestricted.[246] Therefore, there is a lack of oversight and limitations on manned aerial surveillance. Many of the limitations imposed on drones and other unmanned aircraft can be replicated for manned aerial surveillance.[247]

236. *Jones*, 565 U.S. at 423.
237. U.S. v. Maynard, 615 F.3d. 544, 562 (D.C. Cir. 2010).
238. *See* Erin S. Dennis, *A Mosaic Shield: Maynard, the Fourth Amendment, & Privacy Rights in the Digital Age*, 33 CARDOZO L. REV. 737, 741–48 (explaining how the mosaic theory could provide a shield for an individual from government surveillance).
239. *See* Kerr, *supra* note 198, at 314 (supporting that courts may not adopt a mosaic theory).
240. *Id.*
241. *Id.*
242. *Id.*
243. *Id.*
244. *Id.*
245. *Id.* at 353.
246. McNeal, *supra* note 89, at 1.
247. *Id.* at 17.

Additionally, legislatures need to develop restrictions to limit the risks to privacy presented by dragnet style surveillance. This Section offers various legislative recommendations for imposing proper restrictions on aerial surveillance. Ultimately, current Fourth Amendment jurisprudence leaves courts with little to no options to address the concerns of mass aerial surveillance. Legislatively created limitations would far better address the privacy issues of aerial surveillance. These recommendations aim to facilitate both public safety and individual privacy interests.

A. Legislative Solutions

Legislative branches can also play a role in preserving privacy rights and limiting the use of pre-search obtained by aerial surveillance.[248] Indeed, some scholars have argued that legislatures are best suited to enact comprehensive rules for evolving technology.[249] Statutory rules developed by legislatures have advantages over court-developed rules.[250] Legislatures have the ability to develop detailed rules based on expert input which may be updated as frequently as needed while technology continues to evolve.[251] Many legislatures already have imposed limits on the use of unmanned drones by law enforcement.[252] Many of these limitations include requiring a warrant before utilizing drones for surveillance.[253] However, there has yet to be the same sweeping legislative action in regards to manned aircraft.[254] It is unlikely, and ill-advised, to require a warrant for all uses of surveillance aircraft.[255] Surveillance aircraft can serve as an important public safety and rescue tool. However, legislative bodies can impose necessary limitations on the use of surveillance aircraft, and perhaps more importantly, the data that they collect. This Section makes recommendations that legislatures can adopt to facilitate this goal.

1. Resolving Uncertainty in Property-Owner's Rights Over Airspace

The Court has held that law enforcement has wide latitude to surveil private property via aircraft including: backyards, greenhouses, and industrial plants.[256] However, the Supreme Court recognized in *Causby* that property-owners do maintain ownership over at least some of the atmosphere above their property.[257] Because of the uncertainty about property-owners' rights in airspace,

248. Kerr, *supra* note 86.
249. *Id.*
250. *Id.*
251. *Id.* at 807.
252. McNeal, *supra* note 89, at 1.
253. *Id.*
254. *Id.*
255. *Id.* at 23.
256. *See* Kyllo v. United States, 553 U.S. 27, 33 (2001); United States v. Jones, 451 F. Supp. 2d 71, 88 (2006); Dow Chem. Co. v. United States, 476 U.S. 227 (1986) (holding that aerial photography of an industrial plant complex was not a search). *See also* Florida v. Riley, 488 U.S. at 450 (upholding aerial observation of greenhouse); California v. Ciraolo, 476 U.S. at 214 (holding aerial surveillance of backyard by law enforcement constitutional).
257. United States. v. Causby, 328 U.S. 256, 264 (1946)

clarification could help limit aerial intrusions.[258] When considering the issue, Gregory McNeal recommends that legislatures limit the use of aerial surveillance by taking a property-based approach and explicitly extending property owner's rights in their airspace to 350 feet above ground level.[259] This would provide most landowners with airspace rights that extend to more than ten times the height of an average two-story home.[260] While the Court held in *Riley* that surveillance conducted by a helicopter at 400 feet did not require a warrant, it did not foreclose the possibility that a flight at a lower altitude would not be allowed.[261] Furthermore, this approach would still allow for the airspace to be used as a "public highway" in the manner the Court recognized in *Causby*.[262] This would be a crucial consideration as commercial airspace has only increased since *Causby* was decided.[263] Additionally, most aircraft intended for transportation usually fly at much higher altitudes, leaving little danger in expanding land-owners' rights to 350 feet. Expanding property-owner's rights to 350 feet would afford some protection from low flying, surveillance aircraft in a relatively simple manner.

2. Durational Limits on Surveillance

Another proposed legislative rule is enacting limits on the duration that law enforcement may surveil a specific individual. This type of limitation would prevent law enforcement from arbitrarily monitoring the daily activities of individuals as they move from place to place.[264] Durational limits would also prevent surveillance aircraft from hovering over private property to surveil individuals.[265] Furthermore, these limitations could easily be applied to both manned and unmanned aircraft such as drones.[266] Enacting durational limitations will help reduce the harms of persistent and pre-search surveillance.[267]

Gregory McNeal offered several examples of durational limitations. For example, he proposed that surveillance of a specific individual may continue for only 60 minutes at a law enforcement officer's discretion.[268] Surveillance of an individual that takes place for any duration longer than 60 minutes should

258. McNeal, *supra* note 89, at 14.
259. *Id.*
260. *Id.* at 16.
261. *Riley*, 488 U.S. at 454 ("In determining whether Riley had a reasonable expectation of privacy from aerial observation, the relevant inquiry after *Ciraolo* is not whether the helicopter was where it had a right to be under FAA regulations. Rather, consistent with *Katz*, we must ask whether the helicopter was in the public airways at an altitude at which members of the public travel with sufficient regularity that Riley's expectation of privacy from aerial observation was not "one that society is prepared to recognize as 'reasonable.'").
262. *Causby*, 328 U.S. at 264.
263. *The Era of Commercial Jets*, CENTENNIAL OF FLIGHT, https://www.centennialofflight.net/essay/Commercial_Aviation/Jet_Era/Tran7.htm.
264. McNeal, *supra* note 89, at 17.
265. *Id.*
266. *Id.*
267. *Id.*
268. *Id.*

require a court order or warrant.[269] However, legislators must carve out purpose exceptions for aerial surveillance. Aerial surveillance can serve important public safety purposes and event surveillance purposes.[270] With these public safety purposes in mind, legislatures would be unwise to impose blanket regulations upon all instances of aerial surveillance. Legislative members of individual jurisdictions must craft durational limitations that both protect the privacy interests of individuals and limit pre-search surveillance, while allowing for public safety exceptions.

3. Enacting Procedural Protections for Data Collection

Legislatures should also enact procedural protections for the data collected by surveillance aircraft. If aerial surveillance is permitted, there must be adequate safeguards for the footage recorded by surveillance aircraft. Legislators should enact durational limits about how long data may be maintained by law enforcement. Ideal limitations would make it more difficult for law enforcement to access recordings as time passes.[271] Additionally, after a certain length of time, surveillance data should be deleted.[272] This would help preserve privacy for individuals who have been recorded and limit the potential dangers of pre-search.

Individual legislatures will need to identify appropriate durations for data retention and deletion. While the durational limits will be a subject for debate, codifying the limits in law would provide proper guidelines. Codified limitations would also prevent individual agencies and police departments from creating their own standards.[273] Codified durational limits for data retention ensures consistency and proper limitations on government actions.[274] It is imperative for legislative bodies to craft specific limitations for footage obtained by aerial surveillance in order to restrict the dangers of aerial pre-search.

4. Mandating a Warrant Before Review of Surveillance Footage or Surveillance

A more stringent procedural protection for collected data could include mandating a warrant before law enforcement is allowed to review recordings obtained via aerial surveillance. However, this would most likely apply to only certain recordings based on whether the individuals recorded satisfied the *Katz* test.[275] Recordings of individuals who the court determines have no reasonable

269. *Id.* ("60-minute to 48-hour surveillance may only take place with a court order and reasonable suspicion. Surveillance of longer than 48 hours is permissible only when accompanied by a warrant and probable cause.").

270. *Id.* at 18.

271. *Id.*

272. *Id.* at 19.

273. *Id.*

274. *Id.*

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

expectation of privacy, such as those filmed in public, would be unlikely to be afforded such protections.[276]

However, legislative bodies could enact data retention rules which mandate heightened levels of suspicion of an individual or individuals, and additional procedures that must be satisfied before the government is allowed to access recordings or data gathered by aircraft.[277] Furthermore, after a determined time interval recordings must be deleted.[278] A legislative body could determine what procedures should be put in place and after what time interval such data should be deleted. This proposal would help non-suspected individuals maintain their privacy from government surveillance and curb the risks of pre-search by instituting a requirement of a warrant.

Legislatures might take an even more rigid approach and require the use of a warrant before any surveillance of an individual may take place. Some states have already enacted surveillance limitations. For example, New York only allows video surveillance by law enforcement as part of an investigation of alleged criminal behavior pursuant to a warrant.[279] This type of limitation could be replicated and applied to aerial surveillance obtained through aircraft. It is unlikely, though, that a legislative body would impose such a broad warrant requirement considering that surveillance aircraft have been utilized to record public areas for safety monitoring.

5. Mandating a Warrant Before Using Surveillance to Track or Identify an Individual

One of the most pressing civil liberties concerns regarding aerial and pre-search surveillance is the ability for law enforcement to track or identify certain individuals.[280] Through tracking, aerial surveillance systems can follow an individual or his or her vehicle.[281] Legislatures can limit the use of tracking by law enforcement by mandating a warrant before the use of aerial surveillance is used to track a specific individual.[282] Although a warrant is not generally required for individuals in public under the Fourth Amendment, the tracking of an individual represents a significant privacy interest.[283] A warrant requirement would mandate that law enforcement demonstrate that they have probable cause to believe tracking or identifying an individual through the use of aerial

276. *See id.* at 361 (Harlan, J., concurring) ("My understanding of the rule . . . is 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'").

277. McNeal, *supra* note 89, at 4.

278. *Id.* at 19.

279. THE CONSTITUTION PROJECT, *supra* note 59, at 12.

280. *See id.* at 2 (suggesting that surveillance systems "capable of automated tracking, archiving, and identifying suspect behavior" implicate legal challenges including those related to "most important constitutional rights and values").

281. *See id.* at 27 ("'Tracking' refers to the use of public video surveillance systems to automatically follow an individual or her vehicle, regardless of whether her identity is known, so as to create a seamless record of her activity during a specific period.").

282. *Id.* at 28.

283. *See* Katz v. United States, 389 U.S. 347, 351 (1967) ("What a person knowingly exposes to the public . . . is not a subject of Fourth Amendment protection."); THE CONSTITUTION PROJECT, *supra* note 59 at 27.

surveillance will reasonably lead to the discovery of specific evidence of criminal wrongdoing.[284] This limitation would ensure that the potential use of pre-search surveillance is limited to only those suspected of criminal activity. Therefore, this limitation will be protecting individuals that are most likely not involved in any form of legal wrongdoing.

Despite the significant privacy interests of a specifically surveilled individual, legislatures should codify exceptions if they choose to impose a warrant requirement. These exceptions should include those necessary for emergency situations and also embody the exclusionary rule which has been developed through the common law.[285] This codification would ensure that the exceptions to the Fourth Amendment, which have developed through the common law, apply to aerial surveillance. These limitations would achieve an ideal balance between security and privacy interests.

6. Limiting the Potential Abuses of Pre-search Surveillance

Another concern presented by the possibility of pre-search surveillance is the potential for abuse by law enforcement. Recordings have the potential to be misused or leaked, harming the privacy interests of those who are recorded by aerial surveillance.[286] Legislative bodies can reduce the risks of abuse by codifying safeguards to detect, deter, prevent, and punish misuses of video surveillance.[287]

One example of a technological safeguard is requiring the use of encryption for recorded data.[288] Encryption would limit access to stored recordings to only those authorized to view them.[289] Encryption would also offer additional safeguards to recorded data. Mandating the use of encryption technology would prevent rogue government officials or hackers from improperly obtaining or utilizing recordings.

Furthermore, legislatures could enact administrative rules to protect stored surveillance footage. Some administrative safeguards include requiring stored footage to be held by an independent government agency, instead of law enforcement.[290] Doing so would ensure that an independent body rather than law enforcement would maintain control over potentially privacy-sensitive recordings.[291] Additionally, legislatures should impose procedures for accessing the stored footage. An independent agency entrusted with retaining the data would review requests to review footage based on established procedures and

284. THE CONSTITUTION PROJECT, *supra* note 59, at 28.

285. *See, e.g.*, McNeal, *supra* note 89, at 25 (suggesting that "law enforcement us[age of] a drone to search for a lost hiker in a state park," is a "search and rescue mission that fits within the public safety, emergency, or exigency exceptions").

286. THE CONSTITUTION PROJECT, *supra* note 59, at 20.

287. *Id.*

288. *Id.* at 6.

289. *Id.*

290. *Id.* at 20.

291. *Id.* at 31.

only allow law enforcement to review the data only when it has demonstrated sufficient need to review.[292]

These kinds of administrative protections have already been adopted by many Canadian provinces for public video surveillance footage.[293] These provinces, including Alberta, limit who may access stored recordings of public video surveillance and the purposes for which they may be accessed.[294] These types of restrictions could be replicated and applied to mass aerial surveillance recordings in the United States. Replicating these limitations would allow more protections for those subject to pre-search surveillance.

Furthermore, administrative directives should mandate the use of the digital watermarks. Digital watermarks would allow an agency to create a clear record of when and where data was accessed.[295] This would further facilitate transparency and accountability for the footage. Additionally, administrative rules can also mandate that officers log when and why they accessed specific footage.[296] This would provide oversight over the usage of surveillance footage.

7. Transparency and Accountability Measures for Footage

Transparency and accountability policies would also serve to limit government abuses of surveillance footage. Legislators should mandate that the use of mass aerial surveillance to be published on a regular basis.[297] The information published would ideally include the operator of the surveillance system, where and when surveillance occurs. Legislators could also implement stronger limitations such as mandating that surveillance systems publish logs of their flights.[298] Public access to this information would allow the public and watchdog groups to monitor the use of aerial surveillance systems.[299] This kind of transparency policy has been implemented in other countries.[300] Several police departments in the United Kingdom routinely publish flight logs of their helicopters.[301] Jurisdictions in the United States could replicate this practice for aircraft utilized or contracted by law enforcement. Legislatively mandated transparency policies would provide a needed check on surveillance by empowering citizens to hold local government and law enforcement accountable. Enactment of these types of policies limits the dangers of pre-search.

Legislative and judicial action can implement important limitations on pre-search surveillance and protect the individuals recorded by such technological advances. Both courts and legislators must be vigilant as pre-search technology

292. *Id.*
293. *Id.* at 13.
294. *Id.*
295. *Id.* at 31.
296. *Id.*
297. McNeal, *supra* note 89, at 19.
298. *Id.* at 20.
299. *Id.*
300. *See, e.g.*, THE CONSTITUTION PROJECT, *supra* note 59, at 13 (discussing Canadian provinces' surveillance policies); McNeal, *supra* note 248, at 20 (discussing surveillance policies in the United Kingdom).
301. McNeal, *supra* note 89, at 20.

becomes more widely available to law enforcement. Only with the proper oversight and limitations can the protections of the Fourth Amendment be guaranteed to individuals in an increasingly surveilled world.

8. Remedies

An issue that will also need to be resolved by legislatures is remedies for violations of privacy limitations enacted in law. Legislatures can incorporate judicially created remedies for violations of legislatively enacted warrant requirements and other limitations. For example, legislatures may incorporate an exclusionary rule for unlawful seizures.[302] Conversely, legislatures may choose to implement a damages actions scheme as a remedy.[303] Exact remedies would be best evaluated based on the specific laws enacted by legislatures regarding aerial surveillance. For example, if legislatures enacted durational limits on surveillance, any surveillance by law enforcement that exceeds limitations may be challenged in a suppression hearing.[304]

A civil damages scheme may also serve to deter violations of limitations on aerial surveillance. A damages scheme similar to the remedies made available under 42 U.S.C. § 1983 for federal civil rights claims could be enacted on the state level.[305] Compensatory damages for injuries can be made available through legislative enactment with legislatures deciding what causes of action will be made available to those alleging breaches of aerial surveillance legislation.

V. CONCLUSION

The use of mass aerial surveillance will only continue to spread as the technology becomes more affordable and as law enforcement emphasizes the use of predictive crime control methods. However, current Fourth Amendment jurisprudence provides inadequate protections for individual privacy against such pervasive surveillance techniques. Barring an unlikely shift where the Court begins to apply a mosaic theory approach, judicially created limitations are not enough.

Therefore, legislatures will play the most crucial role in developing proper limitations and safeguards for this form of surveillance. Legislative bodies have the ability to craft specific regulations for the use of aerial surveillance by law enforcement. Carefully tailored laws can provide even greater protections for individual privacy as they can be frequently updated as the technology advances. Additionally, legislatively enacted laws can curb the dangers of pre-search by implementing proper limitations on law enforcement and imposing accountability measures. The laws can properly limit what actions law enforcement may take while protecting legitimate surveillance footage. These

302. William J. Stuntz, Warrants and Fourth Amendment Remedies, 77 VA. L. REV. 881, 883 (1991).
303. *Id.*
304. McNeal, *supra* note 89, at 17; Stuntz, *supra* note 302, at 883.
305. 42 U.S.C. § 1983 (2012).

efforts will protect both individual privacy and the ability of law enforcement to utilize advancing surveillance technology. Ultimately, both the judicial and legislative branches must take a proactive role to ensure that the privacy of individuals does not fall prey to the "electric eye."