

In the
United States Court of Appeals
For the Seventh Circuit

No. 20-2352

UNITED STATES OF AMERICA,

Plaintiff-Appellee,

v.

TRAVIS TUGGLE,

Defendant-Appellant.

Appeal from the United States District Court for the
Central District of Illinois.

No. 16-cr-20070 — **James E. Shadid**, *Judge*.

ARGUED MAY 12, 2021 — DECIDED JULY 14, 2021

Before FLAUM, HAMILTON, and BRENNAN, *Circuit Judges*.

FLAUM, *Circuit Judge*. One day, in a not-so-distant future, millions of Americans may well wake up in a smart-home-dotted nation. As they walk out their front doors, cameras installed on nearby doorbells, vehicles, and municipal traffic lights will sense and record their movements, documenting their departure times, catching glimpses of their phone screens, and taking note of the people that accompany them.

These future Americans will traverse their communities under the perpetual gaze of cameras. Camera-studded streets, highways, and transit networks will generate precise information about each vehicle and its passengers, for example, recording peoples' everyday routes and deviations therefrom. Upon arrival at their workplaces, schools, and appointments, cameras on buildings will observe their attire and belongings while body cameras donned on the vests of police and security officers will record snippets of face-to-face or phone conversations. That same network of cameras will continue to capture Americans from many angles as they run errands and rendezvous to various social gatherings. By the end of the day, millions of unblinking eyes will have discerned Americans' occupations and daily routines, the people and groups with whom they associate, the businesses they frequent, their recreational activities, and much more.

The setting described above is not yet a total reality. Nonetheless, we are steadily approaching a future with a constellation of ubiquitous public and private cameras accessible to the government that catalog the movements and activities of all Americans. Foreseeable expansion in technological capabilities and the pervasive use of ever-watching surveillance will reduce Americans' anonymity, transforming what once seemed like science fiction into fact. Constitutionally and statutorily mandated protections stand as critical bulwarks in preserving individual privacy vis-à-vis the government in this surveillance society. To date, however, such measures have been challenged by the pace of technological developments.

The Framers of the Constitution sought "to place obstacles in the way of a too permeating police surveillance." *United*

States v. Di Re, 332 U.S. 581, 595 (1948). That central aim animated their efforts, embodied in the Fourth Amendment to the Constitution, to preserve the “right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures.” For most of our country’s history, the concept of a “search” was tied to common-law trespass, in other words, physical touch. Over time, however, the evolution of technology raised complicated questions regarding the appropriate interpretation and scope of the Fourth Amendment. Chief among those questions: What constitutes a search in a digital society whose technology empowers near-perfect surveillance without the need for physical touch?

To grapple with the enhanced technological capacity of law enforcement investigations, the Supreme Court followed Justice Harlan’s concurrence in *Katz v. United States*, 389 U.S. 347 (1967), and expanded its understanding of Fourth Amendment protections. The resulting *Katz* test, containing subjective and objective components, instructs courts to assess first whether a person has “exhibited an actual (subjective) expectation of privacy” and second, whether that “expectation be one that society is prepared to recognize as ‘reasonable.’” *Id.* at 361 (Harlan, J., concurring).

Despite its best intentions, this expectations-based *Katz* test has paved the way for a perilous circularity for new technology. Specifically, our current formulation of a Fourth Amendment search often turns on whether a used technology becomes widespread. Stated differently, as society’s uptake of a new technology waxes—cars, GPS devices, cameras, and the Internet come to mind—expectations of privacy in those technologies wane. In today’s interconnected, globalized, and

increasingly digital world, for example, Americans largely accept that cell phones will track their locations, their Internet usage will leave digital footprints, and ever-watching fixed cameras will monitor their movements. These evolving expectations thus continually undermine themselves.

As long as the government moves discreetly with the times, its use of advanced technologies will likely not breach society's reconstituted (non)expectations of privacy. The upshot: the *Katz* test as currently interpreted may eventually afford the government ever-wider latitude over the most sophisticated, intrusive, and all-knowing technologies with lessening constitutional constraints.

These observations bring us to the instant case, a harbinger of the challenge to apply Fourth Amendment protections to accommodate forthcoming technological changes. Suspecting defendant Travis Tuggle's involvement in drug trafficking, the government surveilled him for eighteen months without a warrant. The officers installed three cameras on public property that captured the outside of Tuggle's home. When the government used the resulting footage to prosecute Tuggle, Tuggle moved to suppress the footage as violative of his Fourth Amendment right.

Tuggle's case presents an issue of first impression for this Court: whether the warrantless use of pole cameras to observe a home on either a short- or long-term basis amounts to a "search" under the Fourth Amendment. The answer—and even how to reach it—is the subject of disagreement among our sister circuits and counterparts in state courts. Their divergent answers reflect the complexity and uncertainty of the prolonged use of this technology and others like it. Nevertheless, most federal courts of appeals that have weighed in on

the issue have concluded that pole camera surveillance does not constitute a Fourth Amendment search.

Ultimately, bound by Supreme Court precedent and without other statutory or jurisprudential means to cabin the government's surveillance techniques presented here, we hold that the extensive pole camera surveillance in this case did not constitute a search under the current understanding of the Fourth Amendment. In short, the government's use of a technology in public use, while occupying a place it was lawfully entitled to be, to observe plainly visible happenings, did not run afoul of the Fourth Amendment. Therefore, we affirm the district court's denial of Tuggle's motion to suppress.

I. Background

Between 2013 and 2016, several law enforcement agencies investigated a large methamphetamine distribution conspiracy in central Illinois that resulted in Tuggle's prosecution. The focus of this appeal is the government's warrantless use of three video cameras affixed to nearby utility poles to monitor Tuggle's residence.

The government installed three cameras on public property that viewed Tuggle's home. Agents mounted two cameras on a pole in an alley next to his residence and a third on a pole one block south of the other two cameras. The first two cameras viewed the front of Tuggle's home and an adjoining parking area. The third camera also viewed the outside of his home but primarily captured a shed owned by Tuggle's co-conspirator and codefendant, Joshua Vaultonburg.

Together, the three cameras captured nearly eighteen months of footage by recording Tuggle's property between

2014 and 2016. Law enforcement agents installed the first camera in August 2014, the second in December 2015, and the third in September 2015. The officers left the three cameras on their respective poles until March 2016.

The cameras offered several advantages to the government's investigation of the drug conspiracy. While in use, the cameras recorded around the clock. Rudimentary lighting technology improved the quality of overnight footage, although the cameras did not have infrared or audio capabilities. Law enforcement agents could also remotely zoom, pan, and tilt the cameras and review the camera footage in real time, though the footage captured only the exterior of Tuggle's house. While officers frequently monitored the live feed during business hours, they could later review all the footage, which the government stored at the Federal Bureau of Investigation office in Springfield, Illinois. More generally, the cameras had the practical advantage of enabling the government to surveil Tuggle's home without conspicuously deploying agents to perform traditional visual or physical surveillance on the lightly traveled roads of Tuggle's residential neighborhood.

The cameras provided substantial video evidence that supported the government's eventual indictment of Tuggle (and others). The officers tallied over 100 instances of what they suspected were deliveries of methamphetamine to Tuggle's residence. Camera footage depicted individuals arriving at Tuggle's home, carrying various items inside, and leaving only with smaller versions of those items or sometimes nothing at all. After these alleged "drops," different individuals would soon arrive, enter the home, and purportedly pay for and pick up methamphetamine. Several witnesses

corroborated these activities. Further evidencing a drug operation, the recordings showed Tuggle carrying items to Vaultonburg's shed across the street. All told, the investigating officers determined that Tuggle's conspiracy distributed over twenty kilograms of highly pure methamphetamine.

Relying heavily on the video evidence, the officers secured and executed search warrants on several locations, including Tuggle's house. A grand jury subsequently indicted him on two counts: (1) a violation of 21 U.S.C. § 841(a)(1) and (b)(1)(A) for conspiring to distribute, and possess with intent to distribute, at least 50 grams of methamphetamine and at least 500 grams of a mixture containing methamphetamine, and (2) a violation of 21 U.S.C. § 856(a)(1) for maintaining a drug-involved premises.

Before trial, Tuggle moved to suppress the evidence obtained from the pole cameras, arguing that the use of the cameras constituted a warrantless search in violation of the Fourth Amendment. The district court denied the motion in a written opinion explaining its view that the camera usage did not constitute a search. Thereafter, Tuggle twice moved for the district court to reconsider, but the court denied both motions on grounds that they raised no novel arguments. The day before trial, Tuggle entered a conditional guilty plea, pleading guilty to both counts but reserving his right to appeal the court's denials of his motions to suppress. The district court then sentenced him to 360 months' imprisonment on Count 1 and a concurrent 240 months' imprisonment on Count 2.

This timely appeal followed.

II. Discussion

The issue before us on appeal is whether the district court correctly denied Tuggle’s motion to suppress. That issue calls for a “dual standard of review” under which “we review legal conclusions *de novo* but findings of fact for clear error.” *United States v. Edgeworth*, 889 F.3d 350, 353 (7th Cir. 2018) (citation omitted).

The Fourth Amendment provides, in part, for “[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures.” U.S. Const. amend. IV. “Warrantless searches ‘are *per se* unreasonable under the Fourth Amendment—subject only to a few specifically established and well-delineated exceptions.’” *United States v. Edwards*, 769 F.3d 509, 513 (7th Cir. 2014) (quoting *Arizona v. Gant*, 556 U.S. 332, 338 (2009)). The government did not seek a warrant for the cameras here, and no exception to the warrant requirement applies, so the dispositive question is whether a Fourth Amendment search occurred.

The Supreme Court has developed two distinct paths to identify a search: “[a] search occurs either when the government physically intrudes without consent upon ‘a constitutionally protected area in order to obtain information,’ or ‘when an expectation of privacy that society is prepared to consider reasonable is infringed.’” *United States v. Thompson*, 811 F.3d 944, 948 (7th Cir. 2016) (some internal quotation marks and citations omitted) (first quoting *United States v. Jones*, 565 U.S. 400, 407 (2012); and then quoting *United States v. Karo*, 468 U.S. 705, 712 (1984)). The first path, a physical intrusion, is not relevant because the parties agree that the

government did not physically intrude on Tuggle's property by attaching the cameras to the utility poles on public property.

We therefore focus on the second path to finding a search, a government infringement upon an expectation of privacy that society is prepared to consider reasonable. This path derives from Justice Harlan's famous concurrence in *Katz*, which determined that "a person has a constitutionally protected reasonable expectation of privacy" where that person "exhibit[s] an actual (subjective) expectation of privacy ... that society is prepared to recognize as 'reasonable.'" 389 U.S. at 360–61 (Harlan, J., concurring); see also *Smith v. Maryland*, 442 U.S. 735, 740 (1979) (adopting Justice Harlan's *Katz* test). The Supreme Court later clarified that "*Katz* posits a two-part inquiry: first, has the individual manifested a subjective expectation of privacy in the object of the challenged search? Second, is society willing to recognize that expectation as reasonable?" *California v. Ciraolo*, 476 U.S. 207, 211 (1986). As "[t]he party seeking suppression," Tuggle "bears the burden of establishing that he had a reasonable expectation of privacy in what was searched." *United States v. Scott*, 731 F.3d 659, 663 (7th Cir. 2013).

On appeal, Tuggle presents two different, but related, arguments that the government's use of the three pole cameras to monitor the activities in front of and outside his house constituted a search under the Fourth Amendment. First, he argues that the warrantless pole camera surveillance of his residence, irrespective of the length of that surveillance use, violated his Fourth Amendment rights. Second, he argues—relying on the mosaic theory—that the "long-term, warrantless surveillance over a period of approximately eighteen

months” amounted to a Fourth Amendment violation. We consider each argument in turn.

A. The Isolated Use of Cameras

Tuggle first frames the issue as “whether the use of warrantless pole camera surveillance of Mr. Tuggle’s private residence violated his Fourth Amendment rights?” For present purposes, we will consider only whether the isolated use of pole cameras—by which we mean the use of pole cameras irrespective of the length of that use—constitutes a Fourth Amendment search. In other words, we ask: Did the Fourth Amendment preclude law enforcement officers from the isolated use of pole cameras on public property without a warrant to observe Tuggle’s private home?

Framed as such, the answer is clearly no. At the outset, we note that Tuggle likely has not, at *Katz*’s first prong, “exhibited an actual (subjective) expectation of privacy” in the goings-on outside of his home. *Katz*, 389 U.S. at 361 (Harlan, J., concurring). Nothing in the record suggests that Tuggle erected any fences or otherwise tried to shield his yard or driveway from public view, which might have signaled he feared the wandering eye or camera lens on the street. We therefore do not confront the more challenging situation in which the government intentionally places cameras to see *over* a fence to observe a private residence in a manner unavailable to a ground-level passerby. See generally *United States v. Cuevas-Sanchez*, 821 F.2d 248, 251 (5th Cir. 1987) (concluding that defendant “manifested the subjective expectation of privacy in his backyard” because “he erected fences around [it], screening the activity within from views of casual observers,” and “the area monitored by the camera fell within the curtilage of his home, an area protected by traditional fourth

amendment analysis”). Nevertheless, courts have not uniformly applied the subjective prong of the *Katz* test, and some legal scholars have called its significance in resolving cases into question. See generally Orin S. Kerr, *Katz Has Only One Step: The Irrelevance of Subjective Expectations*, 82 U. Chi. L. Rev. 113, 113 (2015) (arguing that “the majority of judicial opinions applying *Katz* do not even mention the subjective-expectations test; opinions that mention the test usually do not apply it; and even when courts apply it, the test makes no difference to the results”). Thus, we primarily focus our attention on *Katz*’s objective inquiry.

As to that objective prong—those privacy expectations society is willing to accept as reasonable— “[t]he expectation of privacy does not extend to ‘[w]hat a person knowingly exposes to the public, even in his own home or office.’” *Thompson*, 811 F.3d at 949 (quoting *Katz*, 389 U.S. at 351). The Supreme Court has made clear that “[t]he Fourth Amendment protection of the home has never been extended to require law enforcement officers to shield their eyes when passing by a home on public thoroughfares.” *Ciraolo*, 476 U.S. at 213; see also *Kyllo v. United States*, 533 U.S. 27, 32 (2001) (“[V]isual observation is no ‘search’ at all.”); *California v. Greenwood*, 486 U.S. 35, 41 (1988) (“[P]olice cannot reasonably be expected to avert their eyes from evidence of criminal activity that could have been observed by any member of the public.”). We have also observed that home dwellers do not generally enjoy a “reasonable expectation of privacy in [their] driveway[s].” See *United States v. Evans*, 27 F.3d 1219, 1228–29 (7th Cir. 1994) (collecting cases); see also *United States v. French*, 291 F.3d 945, 955 (7th Cir. 2002) (holding defendant had “no reasonable expectation of privacy in the driveway and gravel walkways” leading to his home).

In this case, Tuggle knowingly exposed the areas captured by the three cameras. Namely, the outside of his house and his driveway were plainly visible to the public. He therefore did not have an expectation of privacy that society would be willing to accept as reasonable in what happened in front of his home. *See Evans*, 27 F.3d at 1228. The Fourth Amendment accordingly did not require officers to “shield their eyes” (or their cameras) when passing by Tuggle’s “home on public thoroughfares.” *See Ciruolo*, 476 U.S. at 213.

Tuggle’s argument that the cameras transformed otherwise lawful visual surveillance into unconstitutional technological surveillance does not undermine our conclusion that the isolated use of pole cameras here did not constitute a search. Specifically, Tuggle argues that “[w]hile the ‘fruits’ of the pole cameras could have been achieved by traditional visual or physical surveillance, the use of technology change[d] the reasonableness of the expectation of privacy.” *See Jones*, 565 U.S. at 412 (“It may be that achieving the same result through electronic means, without an accompanying trespass, is an unconstitutional invasion of privacy”).

To be sure, the Supreme Court has cautioned that the government’s use of some technologies falls within the ambit of the Fourth Amendment, but the Court has also affirmed that “[n]othing in the Fourth Amendment prohibit[s] the police from augmenting the sensory faculties bestowed upon them at birth with such enhancement as science and technology afforded them in” certain instances. *United States v. Knotts*, 460 U.S. 276, 282 (1983).

The prototypical example of impermissible technology for Fourth Amendment purposes is the government’s use of a thermal imaging device that detects relative heat levels within

a residence. The Supreme Court held the use of the device to be an unlawful search in violation of the Fourth Amendment in *Kyllo v. United States*. 533 U.S. at 40. While the thermal imaging device did not physically intrude on the defendant's property, the Court expressed concern about "leav[ing] the homeowner at the mercy of advancing technology." *Id.* at 35. The Court therefore held that governmental use of "a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion," constitutes a Fourth Amendment search "and is presumptively unreasonable without a warrant." *Id.* at 40.

Despite the *Kyllo* standard, the Supreme Court has routinely approved of law enforcement officers' use of cameras to aid investigations. In *Dow Chemical Co. v. United States*, 476 U.S. 227 (1986), the Supreme Court held "that the taking of aerial photographs of [a 2,000-acre] industrial plant complex from navigable airspace is not a search prohibited by the Fourth Amendment." *Id.* at 239. The Court acknowledged that "the technology of photography has changed in this century," *id.* at 231, and said:

It may well be ... that surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally proscribed absent a warrant. But the photographs here are not so revealing of intimate details as to raise constitutional concerns. Although they undoubtedly give [the government] more detailed information than naked-eye views, they remain limited to an outline of the facility's buildings and equipment.

Id. at 238. To that end, the Court noted that “[t]he mere fact that human vision is enhanced somewhat, at least to the degree here, does not give rise to constitutional problems” because the aerial photography cameras did not raise the “far more serious questions” presented by a device that could “penetrate walls or windows so as to hear and record confidential discussions.” *Id.* at 238–39.

On the same day it issued *Dow Chemical*, the Supreme Court held in *California v. Ciraolo* that law enforcement did not violate the Fourth Amendment when it observed and photographed the defendant’s marijuana plants while flying 1,000 feet overhead in a private plane. 476 U.S. at 209–10. The Court explained that although the defendant may have demonstrated a subjective expectation of privacy by erecting fences, society was not prepared to accept that expectation as reasonable because the government surveilled “within public navigable airspace ... in a physically nonintrusive manner.” *Id.* at 213. In other words, “[a]ny member of the public flying in this airspace who glanced down could have seen everything that these officers observed.” *Id.* at 213–14. The Court did not even consider the impact of the camera—thus assuming it was entirely permissible for officers to use cameras in that place in which they were lawfully entitled to be.

Despite the prevalence of cameras in today’s society, we have not identified in our own precedent any cases in which we squarely evaluated the constitutionality of the government’s use of remote cameras, pole cameras, or the like, to aid law enforcement surveillance. We have, however, acknowledged the commonplace role cameras have in our society. *Cf. United States v. Paxton*, 848 F.3d 803, 812 (7th Cir. 2017) (“[W]e are fast approaching a day when police interactions with

civilians, including detainees, will be recorded from beginning to end, and for a variety of important ends.”). Thus, the question of whether the isolated use of pole cameras, without a warrant, on public property is constitutional is an issue of first impression. Our sister circuits, including the Fourth and the Tenth Circuits, that have considered governmental reliance on cameras to observe the exteriors of private homes have held such uses to be constitutional.¹

We likewise conclude that, under a straightforward application of *Kyllo*, the isolated use of pole cameras here did not run afoul of Fourth Amendment protections. Today, cameras are in “general public use.” *Kyllo*, 533 U.S. at 40. Now more than ever, cameras are ubiquitous, found in the hands and pockets of virtually all Americans, on the doorbells and entrances of homes, and on the walls and ceilings of businesses. See *Carpenter v. United States*, 138 S. Ct. 2206, 2220 (2018) (declining to “call into question conventional surveillance techniques and tools, such as security cameras” (emphasis added)); *Paxton*, 848 F.3d at 812. To that point, if some thirty years ago extensive aerial photography of a 2,000-acre industrial property, see *Dow Chem.*, 476 U.S. at 229, or of marijuana plants otherwise concealed at ground level, see *Ciraolo*, 476 U.S. at 209, did not qualify as Fourth Amendment searches, then certainly

¹ See, e.g., *United States v. Vankesteren*, 553 F.3d 286, 287 (4th Cir. 2009) (holding the government had not violated the defendant’s Fourth Amendment rights through use of “a hidden, fixed-range, motion-activated video camera placed in the [defendant’s] open fields”); *United States v. Jackson*, 213 F.3d 1269, 1282 (10th Cir.) (holding that “evidence obtained from the video cameras installed on the telephone poles and the recordings made in the undercover FBI car were not introduced in violation of ... the Fourth Amendment”), *vacated on other grounds*, 531 U.S. 1033 (2000).

ground-level video footage of an unobstructed home from a public vantage point is not a search.

While the video cameras in this case “undoubtedly g[a]ve [the government] more detailed information than naked-eye views,” they did not do so to a degree that “give[s] rise to constitutional problems.” See *Dow Chem.*, 476 U.S. at 238. The government only used the cameras to identify who visited Tuggle’s house and what they carried, all things that a theoretical officer could have observed without a camera. Cf. *Thompson*, 811 F.3d at 950 (“The video cameras in this case captured nothing more than what the informant could see with his naked eye.”). That the government could replay the footage and remotely control the camera does not affect our analysis because these features are a far cry from the “highly sophisticated surveillance equipment not generally available to the public” that animated the *Dow Chemical* decision. 476 U.S. at 238. The cameras did not “penetrate walls or windows so as to hear and record confidential” information, *id.* at 239, nor did they “explore details of the home that would previously have been unknowable without physical intrusion,” *Kyllo*, 553 U.S. at 40.

In sum, the government used a commonplace technology, located where officers were lawfully entitled to be, and captured events observable to any ordinary passerby. The government did not invade an expectation of privacy that society would be prepared to accept as reasonable. Accordingly, the isolated use of pole cameras here did not constitute a Fourth Amendment search.

B. The Prolonged, Round-the-Clock Use of Cameras

The more challenging question is Tuggle’s second theory of a Fourth Amendment violation: that the prolonged and uninterrupted use of those cameras constituted a search. Tuggle characterizes this theory in two ways. First, he argues more generally that the “long-term use of the pole cameras over an extended period of approximately eighteen months violates the Fourth Amendment.” Second, he asserts that “[a]pplying the mosaic theory, the use of warrantless pole cameras continuously for over [eighteen] months is unconstitutional under the Fourth Amendment.” While framed differently, both Tuggle’s theories functionally ask whether the mosaic theory supports finding a Fourth Amendment search here. To answer that question, we will begin by explaining the mosaic theory and noting that while the theory has gained some judicial traction the Supreme Court has yet to affirmatively require lower courts to apply it. Then, we will outline how other courts have disagreed over whether prolonged pole camera surveillance constitutes a Fourth Amendment search. Drawing on those discussions—and noting our reservations—we will finally address why the prolonged use of pole cameras here did not constitute a Fourth Amendment search.

1. *The Mosaic Theory Generally*

In its simplest form, the mosaic theory attempts to capture the idea that the “government can learn more from a given slice of information if it can put that information in the context of a broader pattern, a mosaic.” Matthew B. Kugler & Lior Jacob Strahilevitz, *Actual Expectations of Privacy, Fourth Amendment Doctrine, and the Mosaic Theory*, 2015 Sup. Ct. Rev. 205, 205 (2015). Thus, it “holds that, when it comes to people’s reasonable expectations of privacy, the whole is greater than the

sum of its parts." *Id.*; see also David Gray & Danielle Keats Citron, *A Shattered Looking Glass: The Pitfalls and Potential of the Mosaic Theory of Fourth Amendment Privacy*, 14 N.C. J. L. & Tech. 381, 415 (2013) ("The mosaic theory recognizes that, although a collection of dots is sometimes nothing more than a collection of dots, some collections of dots, when assessed holistically, are *A Sunday Afternoon on the Island of La Grande Jatte.*"); Orin S. Kerr, *The Mosaic Theory of the Fourth Amendment*, 111 Mich. L. Rev. 311, 313 (2012). For present purposes, we ground our discussion in these high-level articulations of the mosaic theory although we note that justices, judges, and academics vary in how they define and (even whether they explicitly) refer to the theory and its principles.

Some judges and justices have relied on mosaic-like reasoning, but the Supreme Court has not bound lower courts to apply the mosaic theory. The theory first emerged in Fourth Amendment jurisprudence in *United States v. Maynard*, 615 F.3d 544 (D.C. Cir. 2010). The D.C. Circuit considered whether the government's tracking of the defendant's car for twenty-eight days by installing a global positioning system ("GPS") device onto his car without a valid warrant constituted a search under the Fourth Amendment. *Id.* at 555. The court invoked the "mosaic theory," *id.* at 562, to determine that the surveillance constituted a Fourth Amendment search:

[W]e hold 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. It is one thing for a passerby to observe or even to follow someone during a single journey as he goes to

the market or returns home from work. It is another thing entirely for that stranger to pick up the scent again the next day and the day after that, week in and week out, dogging his prey until he has identified all the places, people, amusements, and chores that make up that person's hitherto private routine.

Id. at 560. The D.C. Circuit continued:

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

Id. at 562 (footnote omitted).

Reviewing the issue of GPS monitoring under a different name, *United States v. Jones*, a majority of the Supreme Court affirmed *Maynard* on a narrow “property-based” theory, *see* 565 U.S. at 404–11, declining to rely on the mosaic theory, *see id.* at 412–13. Specifically, the *Jones* majority held that the government had effected a physical trespass on private property by attaching the device on the defendant’s vehicle without a warrant. *Id.* at 404–07.

Concurring in the judgment, however, Justice Alito—joined by Justices Ginsburg, Breyer, and Kagan—endorsed the mosaic theory’s logic and rejected the majority’s stringent reliance on a trespass theory. In Justice Alito’s view, the GPS monitoring crossed a constitutional line, wherever that line might be:

[R]elatively short-term monitoring of a person’s movements on public streets accords with expectations of privacy that our society has recognized as reasonable. But the use of longer term GPS monitoring in investigations of most offenses impinges on expectations of privacy. For such offenses, society’s expectation has been that law enforcement agents and others would not—and indeed, in the main, simply could not—secretly monitor and catalogue every single movement of an individual’s car for a very long period.

Id. at 430 (Alito, J., concurring) (citation omitted). As he wrote, “the line was surely crossed before the 4-week mark” of the government’s tracking of “every movement that [the defendant] made in the vehicle he was driving.” *Id.* While describing Justice Alito’s *Jones* concurrence as “cryptic,” scholars have

read his opinion to “echo[] the D.C. Circuit’s mosaic approach in *Maynard*.” Kerr, *The Mosaic Theory, supra*, at 327.

Writing separately, Justice Sotomayor joined the majority but similarly asserted that finding a search was not contingent on a “trespassory intrusion[] on property.” *Jones*, 565 U.S. at 414 (Sotomayor, J., concurring). For Justice Sotomayor, the unique investigatory capabilities of GPS monitoring—including its inexpensiveness, precision, and efficiency—posed serious concerns: “GPS monitoring generates a precise, comprehensive record of a person’s public movements that reflects a wealth of detail about her familial, political, professional, religious, and sexual associations.” *Id.* at 415. She explained:

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.

Id. at 416. As with Justice Alito’s concurring opinion, scholars argue that “[t]his passage clearly echoes the mosaic theory.” Kerr, *The Mosaic Theory, supra*, at 328.

Drawing on the reasoning of these *Jones* concurrences, some scholars have argued that Chief Justice Roberts’s

unanimous opinion in *Riley v. California*, 573 U.S. 373 (2014), further illustrates support for the mosaic theory. *Riley* held that the police may not, without a warrant, search digital information on an arrestee’s seized phone. *Id.* at 386. “Explaining why the arrestee’s wallet could be searched but his cell phone could not, Roberts offered an argument that is much akin to the mosaic theory: [‘]The sum of an individual’s private life can be reconstructed through a thousand photographs labeled with dates, locations, and descriptions; the same cannot be said of a photograph or two of loved ones tucked into a wallet.[’]” See Kugler & Strahilevitz, *supra*, at 208 (quoting *Riley*, 573 U.S. at 394).

Most recently, a five-justice majority of the Supreme Court held in *Carpenter v. United States* that the government’s collection of a defendant’s cell-site location information (“CSLI”) (the time-stamped records a mobile phone makes every time it connects to radio antennas known as cell sites) for a period of 127 days amounted to a search under the Fourth Amendment. 138 S. Ct. at 2211–12, 2220. The Court determined that this investigative practice violated the defendant’s reasonable expectation of privacy because it provided “an all-encompassing record of the holder’s whereabouts,” uncovering “an intimate window into a person’s life, revealing not only his particular movements, but through them his ‘familial, political, professional, religious, and sexual associations.’” *Id.* at 2217 (quoting *Jones*, 565 U.S. at 415 (Sotomayor, J., concurring)). The Court emphasized that “[a] majority of this Court has already recognized that individuals have a reasonable expectation of privacy in the whole of their physical movements.” *Id.* (citing Justice Alito’s and Justice Sotomayor’s *Jones* concurrences). Scholars describe the *Carpenter* majority as effectively “endors[ing] the mosaic theory of privacy.” Paul

Ohm, *The Many Revolutions of Carpenter*, 32 Harv. J.L. & Tech. 357, 373 (2019).

Despite garnering passing endorsement from some—if not most—of the justices in the various opinions in *Jones*, *Riley*, and *Carpenter*, the theory has not received the Court’s full and affirmative adoption. At a minimum, the Supreme Court has not yet required lower courts to apply it. Moreover, many courts that have considered the theory have expressed disapproval,² although not without exception.³ Additionally, the

² See, e.g., *United States v. Howard*, 426 F. Supp. 3d 1247, 1255–56 (M.D. Ala. 2019) (declining to apply the mosaic theory, in part, because “[t]he idea that constitutionality could hinge on the duration of a ‘search’ has puzzled a Supreme Court justice, several circuit judges, three district courts, two state supreme courts, and one of the nation’s leading Fourth Amendment scholars” (footnotes omitted)), *aff’d*, No. 20-10877, 2021 WL 2155414 (11th Cir. May 27, 2021); *State v. Muhammad*, 451 P.3d 1060, 1073 (Wash. 2019) (rejecting government’s argument invoking mosaic theory and criticizing the theory as eluding a “workable analysis” because “[r]ather than offering analysis based on a reasonable expectation of privacy, the mosaic theory instead requires a case-by-case, ad hoc determination of whether the length of time of a cell phone ping violated the Fourth Amendment”); *Tracey v. State*, 152 So. 3d 504, 520 (Fla. 2014) (rejecting mosaic theory and “conclud[ing] that basing the determination as to whether warrantless real time cell site location tracking violates the Fourth Amendment on the length of the time the cell phone is monitored is not a workable analysis”).

³ See, e.g., *Commonwealth v. McCarthy*, 142 N.E.3d 1090, 1102–03 (Mass. 2020) (“This aggregation principle or mosaic theory is wholly consistent with the statement in *Katz*, 389 U.S. at 351, 88 S.Ct. 507, that ‘[w]hat a person knowingly exposes to the public ... is not a subject of Fourth Amendment protection,’ because the whole of one’s movements, even if they are all individually public, are not knowingly exposed in the aggregate.” (alterations in original)); *United States v. Diggs*, 385 F. Supp. 3d 648, 652 (N.D.

mainstream academic view has urged courts to reject the theory.⁴ Accordingly, whether or not the theory has merit from a theoretical or policy standpoint, Tuggle has not presented us with binding caselaw indicating that we *must* apply the mosaic theory.

2. *Prolonged Pole Camera Surveillance in Other Courts*

Having noted the reluctance of some courts to adopt the mosaic theory, we now turn to the specific issue at hand: the constitutionality of *prolonged* pole camera surveillance. Like the isolated use of pole cameras, the government's prolonged use of pole cameras to surveil someone's home presents an issue of first impression for this Court. We therefore begin by surveying the decisions of courts that have addressed long-term pole camera or video surveillance.

Ill. 2019) (relying on the "scope of the reasonable expectation of privacy identified by the *Jones* concurrences and reaffirmed in *Carpenter*" to find a search based on government's use of GPS data), *reconsideration denied*, No. 18 CR 185, 2020 WL 208826 (N.D. Ill. Jan. 14, 2020); *State v. Jones*, 2017 SD 59, ¶ 29, 903 N.W.2d 101, 110 ("The information gathered through the use of targeted, long-term video surveillance will necessarily include a mosaic of intimate details of the person's private life and associations.").

⁴ See, e.g., Kerr, *The Mosaic Theory*, *supra*, at 344, 353 (detailing case against mosaic theory in favor of a "sequential approach to Fourth Amendment analysis" and concluding that "despite ... good intentions, the mosaic theory represents a Pandora's Box that courts should leave closed"); Kugler & Strahilevitz, *supra*, at 259–60 (illustrating, empirically, "that very large majorities of the American public do not conceptualize Fourth Amendment expectations of privacy in a manner that is congenial to the 'mosaic theory'"). *But see generally* Gray & Citron, *supra*, at 411–28 (responding to prominent criticism of, and defending, mosaic theory).

Federal circuit, federal district, and state courts have splintered on how to treat police use of cameras on public property (or, with consent, on private property) to record what happens outside one's home. That said, not all the cases we discuss specifically addressed the issue of the government using cameras to paint a mosaic of a person's private life, nor did all the cases deal specifically with pole cameras.

Our sister circuits have almost uniformly declined to find Fourth Amendment searches in situations similar to the one presented here. For example, in *United States v. Houston*, 813 F.3d 282 (6th Cir. 2016), the Sixth Circuit concluded the government's use of pole cameras installed on public property and trained on the defendant's home for ten weeks did not constitute a Fourth Amendment search. *Id.* at 287–88. The Sixth Circuit reasoned the defendant did not have a “reasonable expectation of privacy in video footage recorded by a camera that was located on top of a public utility pole and that captured the same views enjoyed by passersby on public roads.” *Id.* The Sixth Circuit emphasized that the agents “only observed what [the defendant] made public to any person traveling on the roads surrounding the farm” and that the camera accomplished what agents “stationed ... round-the-clock” could have observed. *Id.* at 288. Furthermore, they explicitly rejected that the duration of surveillance altered their analysis “because the Fourth Amendment does not punish law enforcement for using technology to more efficiently conduct their investigations.” *Id.*⁵

⁵ See also *United States v. Trice*, 966 F.3d 506, 516 (6th Cir. 2020) (reaffirming *Houston* post-*Carpenter*), *cert. denied*, 141 S. Ct. 1395 (2021). But see *United States v. Anderson-Bagshaw*, 509 F. App'x 396, 405 (6th Cir.

In harmony with the Sixth Circuit, the First,⁶ Fourth,⁷ and Tenth⁸ Circuits (and arguably the Ninth Circuit⁹) have similarly approved of governmental use of cameras, but we again

2012) (“[W]e confess some misgivings about a rule that would allow the government to conduct long-term video surveillance of a person’s backyard without a warrant. Few people, it seems, would expect that the government can constantly film their backyard for over three weeks using a secret camera that can pan and zoom and stream a live image to government agents.”).

⁶ See, e.g., *United States v. Bucci*, 582 F.3d 108, 116–17 (1st Cir. 2009) (holding defendant did not establish “a reasonable objective expectation of privacy” that was invaded by eight-month long video surveillance of his home from a utility pole). *But see United States v. Moore-Bush*, 982 F.3d 50, 50 (1st Cir. 2020) (mem.) (scheduling en banc hearing for March 23, 2021, to review panel decision affirming *Bucci* on stare decisis grounds).

⁷ The Fourth Circuit held that the government’s use of “a hidden, fixed-range, motion-activated video camera placed in the [defendant’s] open fields” did not violate the Fourth Amendment. *Vankesteren*, 553 F.3d at 287, 288–91. This decision, however, did not turn on how long the government used the camera.

⁸ The Tenth Circuit held that “evidence obtained from the video cameras installed on the telephone poles and the recordings made in the undercover FBI car were not introduced in violation of ... the Fourth Amendment.” *Jackson*, 213 F.3d at 1282; see also *United States v. Cantu*, 684 F. App’x 703, 703 (10th Cir. 2017) (unpublished) (reaffirming *Jackson*’s holding that warrantless video surveillance did not constitute search). Like the Fourth Circuit in *Vankesteren*, however, neither *Jackson* nor *Cantu* centered on the mosaic or a like theory.

⁹ In holding that footage obtained from surveillance camera installed without warrant in a common area of hospital did not constitute Fourth Amendment search, the Ninth Circuit reasoned “the defendant had no objectively reasonable expectation of privacy that would preclude video surveillance of activities already visible to the public.” See *United States v. Gonzalez*, 328 F.3d 543, 548 (9th Cir. 2003).

note these cases did not squarely address the same factual and legal circumstances presented here.

Furthermore, the only circuit to require the government to seek a court order authorizing video surveillance is the Fifth Circuit, which, decades before *Jones* and *Carpenter*, found the government's use of a pole camera for more than thirty days to record the exterior of defendant's home "qualif[ied] as a search under the [F]ourth [A]mendment" See *Cuevas-Sanchez*, 821 F.2d at 251. Significantly, however, the government positioned the camera in that case to look over a ten-foot-tall fence and capture images unviewable to passersby. See *id.* Thus, for now, no federal circuit court has found a Fourth Amendment search based on long-term use of pole cameras on public property to view plainly visible areas of a person's home. To part ways with our sister circuits that have spoken to pole cameras, then, would likely create a circuit split, which "generally requires quite solid justification; we do not lightly conclude that our sister circuits are wrong." *Andrews v. Chevy Chase Bank*, 545 F.3d 570, 576 (7th Cir. 2008).

Federal district courts are mixed on whether pole camera surveillance constitutes a search. Following the trend lines of the federal circuit courts, district courts in the Seventh Circuit have found no Fourth Amendment searches when law enforcement officers made extended use of pole cameras.¹⁰ Some federal district courts outside the Seventh Circuit

¹⁰ See, e.g., *United States v. Kubasiak*, No. 18-CR-120, 2018 WL 4846761, at *3, *7 (E.D. Wis. Oct. 5, 2018) (finding monthslong use of a camera installed on defendant's neighbor's property was not a Fourth Amendment search because footage revealed "only what the neighbor, or a police officer standing in the neighbor's house, could have seen"); *United States v.*

Kay, No. 17-CR-16, 2018 WL 3995902, at *1, *3 (E.D. Wis. Aug. 21, 2018) (concluding eighty-seven days of pole camera surveillance “[did] not constitute a Fourth Amendment search” and noting “nearly every federal court which has addressed the issue has held that pole camera surveillance of a person’s driveway or the exterior of his residence does not violate the person’s reasonable expectation of privacy”); *United States v. Tirado*, No. 16-CR-168, 2018 WL 1806056, at *3–4 (E.D. Wis. Apr. 16, 2018) (finding three-month use of pole camera was not a search because, prior to *Carpenter*, “the Seventh Circuit ha[d] not so held [that to be unconstitutional], and the other circuit courts of appeal ha[d] rejected such claims”); see also generally *United States v. Harris*, No. 17-CR-175, 2021 WL 268322 (E.D. Wis. Jan. 27, 2021) (finding warrantless video surveillance cameras in and outside of defendant’s apartment complex did not amount to Fourth Amendment search because “[u]nlike [the CSLI in *Carpenter*], the video surveillance did not track the totality of the defendant’s movements” (citation omitted)).

agree that use of pole cameras does not constitute a search.¹¹ Nevertheless, that view is not unanimous.¹²

¹¹ See, e.g., *United States v. Flores*, No. 19-CR-364, 2021 WL 1312583, at *8 (N.D. Ga. Apr. 8, 2021) (finding no Fourth Amendment search from pole camera footage because “[t]he images of a single, fixed location captured by the pole camera in this case d[id] not equate with the activities revealed by cell-site location information considered by the Court in *Carpenter*”); *United States v. Edmonds*, 438 F. Supp. 3d 689, 694 (S.D. W. Va. 2020) (“declin[ing] to adopt the Defendant’s proposed blanket rule that a warrant is required for use of a pole camera placed in a public location with a view available to the public”); *United States v. Mazzara*, No. 16 CR. 576, 2017 WL 4862793, at *10–12 (S.D.N.Y. Oct. 27, 2017) (finding that twenty-one-month “video surveillance at issue ... did not violate any expectation of privacy that modern society is prepared to recognize as reasonable under *Katz* and its progeny”); *United States v. Pratt*, No. 16-CR-20677-06, 2017 WL 2403570, at *4 (E.D. Mich. June 2, 2017) (“Continuous camera surveillance of private property does raise privacy concerns and is evocative of an ‘Orwellian state.’ But there are mitigating factors and controlling precedent which justify denial of the motion to suppress here.” (citation omitted)); *United States v. Gilliam*, No. 12-CR-93, 2015 WL 5178197, at *9 (W.D. Pa. Sept. 4, 2015) (finding no “objectively reasonable expectation of privacy when the images captured by the pole camera were visible to any person who was located in the public street looking at his home”); *United States v. Brooks*, 911 F. Supp. 2d 836, 843 (D. Ariz. 2012) (“[L]aw enforcement’s use of the pole camera did not violate the Fourth Amendment”).

¹² See, e.g., *United States v. Houston*, 965 F. Supp. 2d 855, 898 (E.D. Tenn. 2013) (finding that “warrantless video surveillance of the curtilage of [the Defendant’s home], beyond fourteen (14) days violated the Defendant’s reasonable expectation of privacy”); *United States v. Vargas*, 2014 U.S. Dist. LEXIS 184672, *27 (E.D. Wash. Dec. 15, 2014) (“[L]aw enforcement’s video surveillance of [the defendant’s] front yard for six weeks with a camera that could zoom and record violated his reasonable expectation of privacy: an expectation that society is prepared to recognize as reasonable.”).

State courts likewise disagree whether pole camera use constitutes a search. Some state courts have joined the chorus determining that pole camera use does not qualify as a Fourth Amendment search.¹³ However, other state supreme and appellate courts have found the use of pole cameras for varying durations violates the Fourth Amendment.¹⁴ Mirroring this array of opinions, scholars and students have puzzled over how the law ought to treat pole camera surveillance.¹⁵

¹³ See, e.g., *State v. Duvernay*, 2017-Ohio-4219, 92 N.E.3d 262, 269–70, at ¶ 25 (3d Dist.) (affirming an Ohio “trial court’s determination that law enforcement’s use of the pole camera [for nine days] did not violate [the defendant’s] Fourth Amendment right to privacy”).

¹⁴ See, e.g., *State v. Jones*, 903 N.W.2d at 111–13 (holding that government had executed a search through “the warrantless use of a pole camera to surveil a suspect’s activities outside his residence for two months”); *People v. Tafoya*, 2019 COA 176, ¶¶ 2, 33–52, No. 17CA1243, 2019 WL 6333762, at *1, *6–10 (holding that “the continuous, three-month-long use of the pole camera constituted a search under the Fourth Amendment”), cert. granted, No. 20SC9, 2020 WL 4343762 (Colo. June 27, 2020); cf. *Commonwealth v. Mora*, 150 N.E.3d 297, 302 (Mass. 2020) (concluding that “continuous, long-term pole camera surveillance targeted at the residences of [the defendants] well may have been a search within the meaning of the Fourth Amendment, a question we do not reach, but certainly was a search under art. 14” of the Massachusetts Declaration of Rights); *Commonwealth v. Comenzo*, No. 1482CR01050, 2021 WL 616548, at *8 (Mass. Super. Jan. 11, 2021) (“[T]he seventeen-day video surveillance in this case would have required a warrant under *Mora*.”).

¹⁵ See, e.g., Taylor H. Wilson, Jr., Note, *The Mosaic Theory’s Two Steps: Surveying Carpenter in the Lower Courts*, 99 Tex. L. Rev. Online 155, 173–75 (2021) (discussing the “close case” pole camera surveillance presents under the mosaic theory); Aparna Bhattacharya, Note, *The Impact of Carpenter v. United States on Digital Age Technologies*, 29 S. Cal. Interdisc. L.J. 489, 501–07 (2020) (discussing and applying *Carpenter* to pole camera

3. *The Pole Camera Surveillance Here Was Not a Search Under the Mosaic Theory*

Having outlined the theoretical and jurisprudential underpinnings of the mosaic theory and various courts' treatment of pole camera footage, we now turn to Tuggle's case. The thrust of Tuggle's argument—rooted in the mosaic theory—is that the government's use of the three pole cameras unconstitutionally “captured the whole of Mr. Tuggle's movements.” See *Carpenter*, 138 S. Ct. at 2217 (“[I]ndividuals have a reasonable expectation of privacy in the whole of their physical movements.”). Even if we accepted the mosaic theory, however—and we do not go that far—current Supreme Court precedent does not support Tuggle's argument.

Of course, the stationary cameras placed around Tuggle's house captured an important sliver of Tuggle's life, but they did not paint the type of exhaustive picture of his every movement that the Supreme Court has frowned upon. If the facts and concurrences of *Jones* and *Carpenter* set the benchmarks, then the surveillance in this case pales in comparison.

surveillance); Matthew Tokson, *The Next Wave of Fourth Amendment Challenges After Carpenter*, 59 Washburn L.J. 1, 17–19 (2020) (predicting the Supreme Court will “rule that [pole camera] surveillance violates the Fourth Amendment”); Taylor Cutteridge, Comment, *Now You See Me: An Examination of the Legality of Police Use of Utility Pole Surveillance Cameras*, 48 Cap. U. L. Rev. 75, 102 (2020) (concluding that the Supreme Court should hold pole camera surveillance does “not constitute a search under the Fourth Amendment”); Tiffany M. Russo, Comment, *Searches and Seizures As Applied to Changing Digital Technologies: A Look at Pole Camera Surveillance*, 12 Seton Hall Cir. Rev. 114, 115–18 (2015) (arguing that courts should broadly apply *Ciraolo*'s holding—that the defendant did not have an objectively reasonable expectation of privacy when his marijuana crop was visible to the naked eye—to video surveillance).

In those cases, the justices expressed concerns about surveillance leading to “a precise, comprehensive record of a person’s *public* movements that reflects a wealth of detail about her familial, political, professional, religious, and sexual associations.” See *Jones*, 565 U.S. at 415 (Sotomayor, J., concurring) (emphasis added); *Carpenter*, 138 S. Ct. at 2217 (same). Following this reasoning, many justices saw the GPS and CSLI technologies in *Jones* and *Carpenter* as capable of capturing the whole of the defendants’ movements, therefore implicating the Fourth Amendment. The CSLI at issue in *Carpenter* even tracked the defendant’s movement through not only public areas, but also private places, which the Court likened to “attach[ing] an ankle monitor to the phone’s user.” 138 S. Ct. at 2218.

Unlike those technologies, the cameras here exposed no details about where Tuggle traveled, what businesses he frequented, with whom he interacted in public, or whose homes he visited, among many other intimate details of his life. If anything, far from capturing the “whole of his physical movements,” *id.* at 2219, or his “public movements,” *Jones*, 565 U.S. at 415 (Sotomayor, J., concurring), the cameras only highlighted Tuggle’s *lack* of movement, surveying only the time he spent at home and thus not illuminating what occurred when he *moved* from his home.

Beyond the justices’ “cryptic” embrace of the mosaic theory, Kerr, *The Mosaic Theory*, *supra*, at 326, the theory, in its inception, drew a distinction between the “passerby ... observ[ing] or even ... follow[ing] someone during a single journey as he goes to the market or returns home from work” and the far more problematic “stranger [who] pick[s] up the scent again the next day and the day after that, week in and week

out, dogging his prey until he has identified all the places, people, amusements, and chores that make up that person's hitherto private routine." *Maynard*, 615 F.3d at 560. The pole cameras in this case likely lie somewhere between these extremes but more closely resemble the former. In one sense, the recordings painted a whole picture of the happenings outside Tuggle's front door by recording nonstop for eighteen months. *See, e.g., State v. Jones*, 903 N.W.2d at 111 ("[O]fficers [were] able to 'capture[] something not actually exposed to public view—the aggregate of all of [the defendant's] coming and going from the home, all of his visitors, all of his cars, all of their cars, and all of the types of packages or bags he carried and when.'" (some alterations in original) (quoting *United States v. Garcia-Gonzalez*, No. 14-10296, 2015 WL 5145537, at *5 (D. Mass. Sept. 1, 2015))). In another important sense, however, the footage only depicted one small part of a much larger whole: Tuggle's life or the "whole of his physical movements." *Carpenter*, 138 S. Ct. at 2219. Given their immobile nature, the cameras could not make out an exhaustive record of Tuggle's "hitherto private routine," *Maynard*, 615 F.3d at 560, because much if not most of the relevant details occurred outside of the immediate area in front of Tuggle's home.

The prospective and nonhistorical use of the pole cameras here further distinguishes them from the technologies in cases where the Supreme Court relied on mosaic-styled arguments, which had retrospective capabilities. In *Riley v. California*, the Court determined that the government had unlawfully searched the defendant's phone based in part on the widening "gulf between physical practicability and digital capacity" of phones. 573 U.S. at 394. The court noted the immense amount of information and data that phones contain, including "photographs, picture messages, text messages, Internet browsing

history, a calendar, a thousand-entry phone book, and so on.” *Id.* As for Internet browsing, the court said it could “reveal an individual’s private interests or concerns.” *Id.* at 395. Fore-shadowing the main issue in *Carpenter*, the Court commented that “[h]istoric location information is a standard feature on many smart phones and can reconstruct someone’s specific movements down to the minute, not only around town but also within a particular building,” essentially allowing the government to go back in time. *Id.* at 396.

The Supreme Court brought this idea to the fore in *Carpenter* when it highlighted CSLI’s “retrospective quality” that “gives police access to a category of information otherwise unknowable.” 138 S. Ct. at 2218. The advent of CSLI-like technology therefore allows the government to “travel back in time to retrace a person’s whereabouts,” obviating what would have been previous “attempts to reconstruct a person’s movements [that] were limited by a dearth of records and the frailties of recollection.” *Id.* at 2218. We recently suggested that *Carpenter* should be read narrowly to proscribe *only* the collection of historical CSLI but not real-time CSLI. *See United States v. Hammond*, 996 F.3d 374, 383 (7th Cir. 2021) (concluding that government only searched defendant when it collected “historical CSLI,” but otherwise finding no search in government’s collection of defendant’s “real-time CSLI”).

By the logic of *Riley* and *Carpenter*, and our recent observations in *Hammond*, the pole camera surveillance here did not run afoul of the Fourth Amendment because the government could not “travel back in time to retrace [Tuggle’s] whereabouts,” *Carpenter*, 138 S. Ct. at 2218, to say nothing of the thorny questions presented by a pre-existing network of

government cameras.¹⁶ The government had to decide *ex ante* to collect the video footage by installing the cameras. The government did not tap into an expansive, pre-existing database of video footage of Tuggle’s home akin to the Internet browsing history and extensive photos stored on cell phones considered in *Riley*, or the expansive CSLI in *Carpenter*. Until the Supreme Court or Congress instructs otherwise, we will read *Carpenter* as limited to the unique features of the historical CSLI at issue there, as distinct from the real-time video footage here. See *Hammond*, 996 F.3d at 387 (“The ‘narrow’ *Carpenter* decision did not determine whether the collection of real-time CSLI constitutes a Fourth Amendment search.”). The majority opinion in *Carpenter* itself offers support for this interpretation, as it stated that the Court was *not* “call[ing] into question conventional surveillance techniques and tools, such as security cameras.” 138 S. Ct. at 2220 (emphasis added). Whether pole cameras are the same as security cameras is irrelevant because the cameras here would clearly qualify as a “conventional surveillance technique[.]” See *id.*

We emphasize, however, that our decision in Tuggle’s case does not rest on the premise that the government *could have*—in theory—obtained the same surveillance by stationing an agent atop the utility poles outside Tuggle’s home, thus rendering the decision to instead use pole cameras constitutional. See *Houston*, 813 F.3d at 289 (“[I]t is only the possibility

¹⁶ See, e.g., Rebecca Lipman, *Protecting Privacy with Fourth Amendment Use Restrictions*, 25 Geo. Mason L. Rev. 412, 436–37 (2018) (“Cameras have existed for a long time; networks of cameras blanketing an entire metro area that are equipped with facial recognition technology have not. Such a network could allow law enforcement to search for any individual, anywhere in a city, going back for weeks or months” (footnotes omitted)).

that a member of the public may observe activity from a public vantage point—not the actual practicability of law enforcement’s doing so without technology—that is relevant for Fourth Amendment purposes.”). This fiction contravenes the Fourth Amendment and *Katz*’s command to assess reasonableness. To assume that the government would, or even could, allocate thousands of hours of labor and thousands of dollars to station agents atop three telephone poles to constantly monitor Tuggle’s home for eighteen months defies the reasonable limits of human nature and finite resources. In our view, the premise that the government could realistically accomplish the pole camera surveillance here for more than a few days is a fiction that courts should not rely on to limit the Fourth Amendment’s protections. *See Jones*, 565 U.S. at 416 (Sotomayor, J., concurring) (“I do not regard as dispositive the fact that the government might obtain the fruits of GPS monitoring through lawful conventional surveillance techniques.”). We thus close the door on the notion that surveillance accomplished through technological means is constitutional simply because the government could theoretically accomplish the same surveillance—no matter how laborious—through some nontechnological means.

Although we now hold that the pole camera surveillance of the exterior of Tuggle’s home did not constitute a Fourth Amendment search, we are not without unease about the implications of that surveillance for future cases. The eighteen-month duration of the government’s pole camera surveillance—roughly four and twenty times the duration of the data collection in *Carpenter* and *Jones*, respectively—is concerning, even if permissible.

That concern presents us with an obvious line-drawing problem: How much pole camera surveillance is too much? Most might agree that eighteen months (roughly 554 days) is questionable, but what about 250 days? 100 days? 20 days? 1 day? *See also* Kerr, *The Mosaic Theory*, *supra*, at 329–43 (detailing the “remarkable set of novel and difficult questions” posed by the mosaic theory). Despite the inherent problems with drawing an arbitrary line, the status quo in which the government may freely observe citizens outside their homes for eighteen months challenges the Fourth Amendment’s stated purpose of preserving people’s right to “be secure in their persons, houses, papers, and effects.” Drawing our own line, however, risks violating Supreme Court precedent and interfering with Congress’s policy-making function, which would exceed our mandate to apply the law. *United States v. Cuevas-Perez*, 640 F.3d 272, 276, 285 (7th Cir. 2011) (Flaum, J., concurring) (“The matter is, as they say, above our pay grade.”), *judgment vacated*, 565 U.S. 1189 (2012).

Beyond the line-drawing issues, we conclude by sounding a note of caution regarding the current trajectory of Fourth Amendment jurisprudence. As technological capabilities advance, our confidence that the Fourth Amendment (as currently understood by the courts) will adequately protect individual privacy from government intrusion diminishes. *Kyllo*, 533 U.S. at 33–34 (“It would be foolish to contend that the degree of privacy secured to citizens by the Fourth Amendment has been entirely unaffected by the advance of technology.”). Current Fourth Amendment jurisprudence admits of a precarious circularity: Cutting-edge technologies will eventually and inevitably permeate society. In turn, society’s expectations of privacy will change as citizens increasingly rely on and expect these new technologies. Once a technology is

widespread, the Constitution may no longer serve as a backstop preventing the government from using that technology to access massive troves of previously inaccessible private information because doing so will no longer breach society's newly minted expectations. With the advent of digital, cloud-based, and smart capabilities, these new technologies will seldom contravene the traditional limitations imposed by the Fourth Amendment on physical invasions. *Jones*, 565 U.S. at 404–11.

Cameras are a perfect example of the circularity. In 1791, no one would expect—because the technology did not exist—that the government could capture a still (or moving) image of a citizen at a given time or place. Even once invented and introduced to society, few would have expected that the government would use then-unwieldy and expensive cameras to aid in fast-moving law enforcement investigations. Eventually, cameras grew so sophisticated, discrete, portable, and inexpensive that they pervaded society. By that point, the government's use of cameras was entirely unsurprising, even though the Framers might have balked at such a prospect when they penned the Fourth Amendment. *See* David Alan Sklansky, *Too Much Information: How Not to Think About Privacy and the Fourth Amendment*, 102 Cal. L. Rev. 1069, 1085 (2014) (“Cameras mounted in public and semi-public places ... are increasingly unremarkable, their presence taken for granted.”). In other words, once society sparks the promethean fire—shifting its expectations in response to technological developments—the government receives license under current Fourth Amendment jurisprudence to act with greater constitutional impunity.

Barring a transformation in governing law, we expect this chronicle of cameras to repeat itself again and again with the evolution of far more invasive technologies. Today's pole cameras will be tomorrow's body cameras,¹⁷ "protracted location tracking using [automatic license plate readers],"¹⁸ drones,¹⁹ facial recognition,²⁰ Internet-of-Things and smart devices,²¹ and so much more that we cannot even begin to

¹⁷ See Erik Nielsen, Comment, *Fourth Amendment Implications of Police-Worn Body Cameras*, 48 St. Mary's L.J. 115, 120 (2016) ("[T]he increased use of widespread video recording, although intended to prevent misconduct of police officers, creates concerns over the Fourth Amendment rights of individuals to be free from unreasonable searches.").

¹⁸ See Samuel D. Hodge, Jr., *Big Brother Is Watching: Law Enforcement's Use of Digital Technology in the Twenty-First Century*, 89 U. Cin. L. Rev. 30, 40 (2020) ("[L]icense plate reader databases provide the opportunity for institutionalized abuse by allowing anyone who has access to the information to snoop into an individual's daily activities, habits, or present and past relationships.").

¹⁹ See Jennifer M. Bentley, Note, *Policing the Police: Balancing the Right to Privacy Against the Beneficial Use of Drone Technology*, 70 Hastings L.J. 249, 251 (2018) ("[D]rones are ... potent tools that can be used to invade privacy and conduct highly intrusive surveillance.").

²⁰ See Andrew Guthrie Ferguson, *Facial Recognition and the Fourth Amendment*, 105 Minn. L. Rev. 1105, 1108 (2021) (asserting that "the Fourth Amendment will not save us from the privacy threat created by facial recognition surveillance").

²¹ See Eunice Park, *Objects, Places and Cyber-Spaces Post-Carpenter: Extending the Third-Party Doctrine Beyond CSLI: A Consideration of IoT and DNA*, 21 Yale J.L. & Tech. 1, 58 (2019) (arguing that "clarity [in Fourth Amendment jurisprudence] is needed for the vast array of unregulated technologies growing in popularity, and for those yet to emerge"); Andrew Guthrie Ferguson, *The "Smart" Fourth Amendment*, 102 Cornell L. Rev. 547, 631 (2017) ("In a world that needs both smart devices and the

envison. New technologies of this sort will not disappear, nor will the complicated Fourth Amendment problems that accompany them. If anything, we should expect technology to continue to grow exponentially. And if current technologies are any indication, that technological growth will predictably have an inverse and inimical relationship with individual privacy from government intrusion, presenting serious concerns for Fourth Amendment protections.

Assuming as much, it might soon be time to revisit the Fourth Amendment test established in *Katz*. See *Cuevas-Perez*, 640 F.3d at 276 (Flaum, J., concurring) (“If the doctrine needs clarifying, tweaking, or an overhaul in light of technologies employed by law enforcement, that additional guidance should come from the Supreme Court.”). Indeed, almost four decades ago, when considering a respondent’s argument that “twenty-four hour surveillance of any citizen of this country will be possible, without judicial knowledge or supervision,” the Court reserved judgement because, “if such dragnet type law enforcement practices as respondent envisions should eventually occur, there will be time enough then to determine whether different constitutional principles may be applicable.” *Knotts*, 460 U.S. at 283–84. As this case illustrates, round-the-clock surveillance for eighteen months is now unextraordinary.

This could also be an apt area for Congress to legislate because, as some have noted, “Congress has significant institutional advantages over the courts in trying to regulate privacy

Fourth Amendment, there ... needs to be a new theory to protect the data trails we leave behind. Without such a theory, data trails will exist outside of Fourth Amendment protection, and an intrusive sensor surveillance system will be created without any constitutional restraints.”).

in new technologies.” Kerr, *The Mosaic Theory*, *supra*, at 350; *see also Kyllo*, 533 U.S. at 51 (Stevens, J., dissenting) (“It would be far wiser to give legislators an unimpeded opportunity to grapple with these emerging issues rather than to shackle them with prematurely devised constitutional constraints.”); *Carpenter*, 138 S. Ct. at 2246 (Thomas, J., dissenting) (“With no sense of irony, the Court invalidates this [statutory] regime today—the one that society actually created in the form of its elected representatives in Congress.” (internal quotation marks and citation omitted)); *Cuevas-Perez*, 640 F.3d at 286 (Flaum, J., concurring) (“[T]he unsettled, evolving expectations in this realm, combined with the fast pace of technological change, may make the legislature the branch of government that is best suited, and best situated, to act.”).

For now, though, we will continue to faithfully apply our current understanding of the Constitution and the Supreme Court’s precedent. With respect to the pole cameras in this case, that understanding requires that we find no search in violation of the Fourth Amendment. The district court therefore did not err in denying Tuggle’s motion to suppress. As such, we have no need to consider the government’s fallback argument that, even if there were a Fourth Amendment search, the good faith exception to the exclusionary rule would apply.

III. Conclusion

For these reasons, we AFFIRM the district court’s denial of Tuggle’s motion to suppress.