Escaping Fourth Amendment Doctrine After *Jones*: Physics, Law, and Privacy Protection

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The Supreme Court's decision in *United States v. Jones*,[1] holding long-term, warrantless tracking via a global positioning system (GPS) device unconstitutional, was a potential watershed in the development of Fourth Amendment law. This is not because the Court's decision was unanimous in protecting privacy. The decision was as divided as it was strong, and it is unlikely to provide terribly helpful direct guidance in future cases. Rather, *Jones* is a potential watershed because it has put Fourth Amendment law into a state of flux. The doctrine that has dominated judicial and popular thinking about constitutional privacy protections is open to revision—revision that it badly needs. Instead of guessing at ''reasonable expectations,'' the Court should return to natural-language definitions of ''search'' and ''seizure'' that can resolve both common and ''high-tech'' Fourth Amendment cases.

Since *Katz v. United States* in 1967,[2] the ''reasonable expectation of privacy'' test has dominated as the doctrine that courts and commentators use to divine the meaning of the Fourth Amendment. But ''reasonable expectations'' is a confusing, unworkable test that the Supreme Court has not applied faithfully to its origins. ''Reasonable expectation'' doctrine reverses the inquiry that the Fourth Amendment's language requires. The Fourth Amendment focuses on the reasonableness of government searches and seizures, not on the reasonableness of individuals in seeking privacy. Courts applying

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[1] 132 S. Ct. 945 (2012).

[2] Katz v. United States, 389 U.S. 347 (1967).

the imbalanced *Katz* doctrine treat ''plain view'' as a simple factual question but ruminate at length about whether ''expectations'' permit something to be concealed.

The *Jones* Court was unanimous in holding that law enforcement may not attach a GPS device to a car and monitor its movements for four weeks without a valid warrant. But there was a deep division as to rationale between Justice Antonin Scalia's majority opinion and Justice Samuel Alito's concurrence—with Justice Sonia Sotomayor writing separately to express broader concerns. Given these complications, courts and commentators will spend the next several years, or even decades, determining why warrantless GPS tracking is unconstitutional.

The majority and concurrence in *Jones* shared the goal of preserving the level of privacy that Americans enjoyed at the time of the Fourth Amendment's adoption. This goal will only be judicially administrable if courts recognize what privacy is and how people protect it.

Privacy is the condition people enjoy when they can control information about themselves and when they exercise that control consistent with their interests and values. Since long before the late 18th century, people have protected privacy by preventing others from perceiving things that reveal personal information. People literally use physics, blocking others' access to the photons, sound waves, particulates, and surfaces that reveal themselves and the things about them. Laws such as property, battery, and contract back the physics of privacy protection.

When the Framers adopted the Fourth Amendment, they were quite familiar with the medium of paper, the information technology known as writing, and the protection of both. Advances in information technology since then lie on the same continuum, but in *Olmstead v. United States* (1928) the Supreme Court failed to recognize the parallels between papers sent in the mail and electric signals sent along a wire.[3] When the Court righted its error in *Katz*, the majority failed to articulate its rationale in the physics of privacy protection. Courts and commentators since then have focused on ''reasonable expectations,'' trying to reason backward from social surmise to constitutional protection.

[3] 277 U.S. 438 (1928).

Courts after *Jones* should reason forward. A thing is exposed if physics and law allow an observer to perceive it. If it is not exposed, it takes a search or seizure (often both) to reveal it. Natural and conventional legal language, not ''expectations,'' should determine whether there has been a ''search'' or ''seizure.'' When government agents have conducted searches or seizures, courts should determine whether or not they were reasonable in the absence of a warrant.[4]

This framework for analysis captures both common cases and the thoroughly modern problems that arise with digital computing and communications. It also returns courts to examining facts and law in Fourth Amendment cases, dispensing with broad societal judgments about privacy ''expectations.''

The *Jones* Court did not provide the clear guidance that courts need to return to application of the Fourth Amendment as a law, free of muddled *Katz* doctrine. But it did throw Fourth Amendment doctrine open so that courts that want to follow can do so. The challenges in current Fourth Amendment doctrine are nicely illustrated by the saga of one Antoine Jones.

I. *United States v. Jones*

In 2004, Antoine Jones, the owner and operator of a nightclub in Washington, D.C., came under suspicion of narcotics trafficking. A joint FBI/Metropolitan Police Department task force targeted him for investigation. Based on information gathered through various investigative techniques, the government obtained a warrant in 2005 authorizing the use of an electronic tracking device on his wife's Jeep Grand Cherokee. The warrant authorized government agents to attach the device in the District of Columbia within 10 days of its issuance.

The agents did not abide by the terms of the warrant.[5] On the 11th day, in Maryland, they installed a GPS tracking device on the

[4] Valuable defenses of the role of warrants in Fourth Amendment jurisprudence can be found at Carol Steiker, Second Thoughts about First Principles, 107 Harv. L. Rev. 820 (1994); Tracey Maclin, When the Cure for the Fourth Amendment Is Worse than the Disease, 68 S. Cal. L. Rev. 1 (1994); Phyllis T. Bookspan, Reworking the Warrant Requirement: Resuscitating the Fourth Amendment, 44 Vand. L. Rev. 44 (1991).

[5] Though it might have asked the court to ignore a trivial violation of the warrant's terms, the government conceded the violation of the warrant and maintained that a warrant was not required.

undercarriage of the Jeep while it was parked in a public parking lot. For the next 28 days, they used the device to track the vehicle's movements and, inferentially, Jones's whereabouts. Using signals from multiple satellites, the device established the vehicle's location within 50 to 100 feet. It relayed this information via cell phone to a government computer. The Supreme Court would find notable that the device ''relayed more than 2,000 pages of data over the 4-week period.''[6]

The government obtained a multiple-count indictment charging Jones and several alleged accomplices with conspiracy to distribute, and possession with intent to distribute, cocaine and cocaine base. Before trial, Jones filed a motion to suppress evidence obtained through the GPS device, arguing that its use violated the Fourth Amendment.

Jones's Trial and Appeal

The district court held most of the GPS-collected data admissible under the Fourth Amendment because '''[a] person traveling in an automobile on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another.'''[7] It suppressed the data collected while Jones's vehicle was parked in his garage because ''residents [have] a justifiable interest in privacy in their home.''[8]

Jones's October 2006 trial produced a hung jury on the conspiracy count, but following a second indictment on the same conspiracy a jury returned a guilty verdict. The district court sentenced Jones to life in prison.

On appeal, the U.S. Court of Appeals for the D.C. Circuit reversed the conviction, finding that admission of the evidence obtained by warrantless use of the GPS device violated the Fourth Amendment.[9] Applying the ''reasonable expectation of privacy'' test differently, the court distinguished the cases that seemed to cut against Fourth Amendment protection for Jones. It held that ''the police action was

[6] Jones, 132 S. Ct. at 948.

[7] United States v. Jones, 451 F. Supp. 2d 71, 88 (2006) (quoting United States v. Knotts, 460 U.S. 276, 281 (1983)).

[8] *Id.* (citing United States v. Karo, 468 U.S. 705, 715 (1984)).

[9] United States v. Maynard, 615 F.3d 544 (2010). The intermediate appellate case was named after Jones's codefendant.

a search because it defeated Jones's reasonable expectation of privacy.''[10]

An electronic tracking case called *United States v. Knotts* did not control, the court determined.[11] In *Knotts*, the Supreme Court had held that the use of a radio beeper to track a suspect to his drug lab was not a search. But the Court had specifically reserved the question of whether different constitutional principles may apply to ''dragnet-type law enforcement practices.''[12] The circuit court deemed *Jones* to be such a case and so went on to address whether Jones could have a Fourth Amendment interest in information about his movements on public roadways.

In *Katz*, the Supreme Court had said, ''What a person knowingly exposes to the public . . . is not a subject of Fourth Amendment protection.''[13] This commonsensical language seemed to apply to the movements of Jones's vehicle. But the circuit court sophistically shifted what it means for something to be ''exposed.'' Exposure, it found, is based on ''not what another person can physically and may lawfully do but rather what a reasonable person expects another might actually do.''[14] The court held that ''the whole of a person's movements over the course of a month is not actually exposed to the public because the likelihood a stranger would observe all those movements is not just remote, it is essentially nil.''[15] Under this reasoning, Jones's movements were not actually ''exposed.''

But were they ''constructively exposed''?[16] The whole of them notwithstanding, each of Jones's movements was actually exposed. Why should compiling them change their constitutional status? The court wrote that the whole of one's movements over the course of a month ''reveals far more than the individual movements it comprises. The difference is not one of degree but of kind. . . .''[17]

[10] *Id.* at 555–56.

[11] Maynard, 615 F.3d at 556–58 (discussing Knotts, 460 U.S. 276 (1983).

[12] Knotts, 460 U.S. at 283–84.

[13] Katz, 389 U.S. at 351.

[14] Maynard, 615 F.3d at 559.

[15] *Id.* at 560.

[16] *Id.* at 560–61.

[17] *Id.* at 562.

This is the ''mosaic theory,'' which has found currency in the application of the Privacy Act to arrest records[18] and in the national security area.[19] The mosaic theory has now become a subject of academic commentary and interest with respect to the Fourth Amendment.[20]

In closing, the appellate court found that Jones's expectation of privacy in his movements over a month was reasonable. Wrapping up loose ends, the court first reassured law enforcement that long-term visual surveillance was not affected by its ruling as to GPS. It found that the search was not reasonable under the automobile exception to the warrant requirement. And, finally, it held that introduction of the GPS evidence was not harmless error.[21]

The novelty of the panel's reasoning did not go unnoticed, and when the full D.C. Circuit denied the government's petition for rehearing *en banc*, there were two dissents. One focused on the use of the ''mosaic theory'' to distinguish the *Jones* case from *Knotts*: It was too much for Chief Judge David Sentelle that the circuit panel's decision enclosed for the purposes of legal doctrine what natural and legal language treated as exposed.[22]

The second dissent highlighted Jones's ''alternative and narrower property-based'' argument that the installation of the GPS device violated the Fourth Amendment.[23] That apparently caught the Supreme Court's attention. Upon granting certiorari, it directed the parties to brief and argue that question: ''Whether the government

[18] See, e.g., U.S. Dep't of Justice v. Nat'l Reporters Comm., 489 U.S. 749 (1989).

[19] See, e.g., CIA v. Sims, 471 U.S. 159, 178 (1985).

[20] See, e.g., Benjamin M. Ostrander, The 'Mosaic Theory' and Fourth Amendment Law, 86 Notre Dame L. Rev. 1733 (2011); Stephen A. Josey, Along for the Ride: GPS and the Fourth Amendment, 14 Vand. J. Ent. & Tech. L. 161, (2011); Stephanie G. Forbes, Following You Here, There, and Everywhere: An Investigation of GPS Technology, Privacy, and the Fourth Amendment, 45 J. Marshall L. Rev. 1 (2011); Erin Smith Dennis, A Mosaic Shield: *Maynard*, the Fourth Amendment, and Privacy Rights in the Digital Age, 33 Cardozo L. Rev. 737 (2011); David E. Pozen, Note, The Mosaic Theory, National Security, and the Freedom of Information Act, 115 Yale L.J. 628 (2005); Orin Kerr, The Mosaic Theory of the Fourth Amendment, 110 Mich. L. Rev. (forthcoming 2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2032821.

[21] Maynard, 615 F.3d at 563–68.

[22] United States v. Jones, 625 F.3d 766, 767–70 (2010) (Sentelle, C.J., dissenting from denial of rehearing *en banc*).

[23] *Id*. at 770–71 (Kavanaugh, J., dissenting from denial of rehearing *en banc*).

violated respondent's Fourth Amendment rights by installing the GPS tracking device on his vehicle without a valid warrant and without his consent.''[24]

At the Supreme Court: Property or Expectations?

Denying the government's appeal, the Supreme Court found that Antoine Jones had been the object of a Fourth Amendment search, which is presumptively unreasonable in the absence of a warrant. The majority's reasoning relied on Jones's property rights in the car.

''We hold that the Government's installation of a GPS device on a target's vehicle, and its use of that device to monitor the vehicle's movements, constitutes [sic] a 'search,''' Justice Scalia wrote for a five-justice majority of the Court.[25] The government ''occupied private property for the purpose of obtaining information.''[26]

The majority opinion emphasized the protection of property. The Fourth Amendment has a ''close connection'' to property, it said, that the enumeration of owned things signals: ''persons, houses, papers, and effects'' may not be unreasonably searched and seized.[27] While the Court has recently ''deviated'' from the ''exclusively property-based'' approach that preceded *Katz*, the court had not abandoned property.[28]

The Supreme Court distinguished *Jones* from *Knotts* differently than the circuit court had. Knotts had not challenged installation of the beeper in the container that he later received, wrote the Court, and the *Knotts* Court had declined to rule on the constitutionality of the installation.[29]

The *Jones* case turned on installation of a tracking device. That recalled a second beeper case, *United States v. Karo*, which addressed

[24] U.S. Supreme Court, Statement of Questions Presented, United States v. Jones (No. 10-1259), available at http://www.supremecourt.gov/qp/10-01259qp.pdf.

[25] Jones, 132 S. Ct. at 949 (footnote omitted). The use of ''and'' to conjoin the ''installation'' and ''use'' phrases suggests that there is more than one thing doing the constituting. Therefore, it should say ''constitute'' without the ''s,'' and there probably should not be commas setting off the latter phrase.

[26] *Id*.

[27] Jones, 132 S. Ct. at 949.

[28] *Id*. at 950.

[29] *Id*. at 952.

whether installation of a beeper was a constitutional search.[30] In *Karo*, the owner of the container at the time of installation had consented and thus Karo was not entitled to object when he later took possession of it, beeper and all.[31] Jones owned the Jeep and (obviously) did not consent at the time the government ''trespassorily inserted the information-gathering device,'' so he was entitled to Fourth Amendment protection and his successful challenge.[32]

Defending against the critique coming in Justice Alito's concurrence, Justice Scalia's opinion emphasized that a future case not involving a trespass—acquisition of radio signals, for example—would remain subject to *Katz* ''reasonable expectation of privacy'' analysis.[33]

Justice Sotomayor concurred separately in a very interesting and sure-to-be influential opinion. She wrote that she joined the majority opinion because ''a search within the meaning of the Fourth Amendment occurs, at a minimum, '[w]here, as here, the Government obtains information by physically intruding on a constitutionally protected area.' ''[34] She reiterated the majority's argument that the *Katz* ''reasonable expectation of privacy'' test augmented, and did not replace, the ''common-law trespassory test that preceded it.''[35] The property test, she said, ''reflects an irreducible constitutional minimum: When the Government physically invades personal property to gather information, a search occurs.''[36]

Justice Sotomayor took pains to express agreement also with Justice Alito's concurrence, which differed from the majority as to rationale. She articulated why extended GPS-based surveillance would violate the ''reasonable expectation of privacy'' test that Justice Alito preferred.[37]

[30] United States v. Karo, 468 U.S. 705 (1984).

[31] Jones, 132 S. Ct. at 952.

[32] *Id*. Technically, the Jeep's owner was Jones's wife. Jones was ''the exclusive driver,'' though, with all the property rights of a bailee. *Id*. at 949 n.2.

[33] *Id*. at 953.

[34] *Id*. at 954 (Sotomayor, J., concurring).

[35] *Id*. at 955.

[36] *Id*.

[37] *Id*. at 954–56.

Importantly, she mused about the weakness of the ''premise that an individual has no reasonable expectation of privacy in information voluntarily disclosed to third parties.''[38] This is the ''third-party doctrine,''[39] of which she wrote:

> This approach is ill-suited to the digital age, in which people reveal a great deal of information about themselves to third parties in the course of carrying out mundane tasks. People disclose the phone numbers that they dial or text to their cellular providers; the URLs that they visit and the e-mail addresses with which they correspond to their Internet service providers; and the books, groceries, and medications they purchase to online retailers.[40]

Justice Alito, joined by three others, concurred in the judgment that Jones had been the subject of an unconstitutional search, but argued strongly against the use of property analysis, or, as he put it, ''18th-century tort law.''[41] He picked on the majority's failure to contend that there was a seizure, and argued that there was not a '''meaningful interference with an individual's possessory interests in . . . property.'''[42]

Justice Alito likened the use of property analysis to the Court's pre-*Katz* case law, cases such as *Olmstead v. United States*, which failed to meet the Fourth Amendment challenges in modern technology.[43] And he noted four other problems with the majority opinion: First, the majority's emphasis on property disregarded the *use* of

[38] *Id*. at 957.

[39] See Matthew D. Lawless, The Third Party Doctrine Redux: Internet Search Records and the Case for a 'Crazy Quilt' of Fourth Amendment Protection, 11 UCLA J.L. & Tech. 1 (2007); Christopher Slobogin, Privacy at Risk: The New Government Surveillance and the Fourth Amendment 151–64 (2007); Susan W. Brenner & Leo L. Clarke, Fourth Amendment Protection for Shared Privacy Rights in Stored Transactional Data, 14 J.L. & Pol'y 211 (2006); Susan Freiwald, First Principles of Communications Privacy, 2007 Stan. Tech. L. Rev. 3; Stephen E. Henderson, Beyond the (Current) Fourth Amendment: Protecting Third-Party Information, Third Parties, and the Rest of Us Too, 34 Pepp. L. Rev. 975 (2007); Andrew J. DeFilippis, Note, Securing Informationships: Recognizing a Right to Privity in Fourth Amendment Jurisprudence, 115 Yale L.J. 1086, 1092 (2006).

[40] Jones, 132 S. Ct. at 957 (Sotomayor, J., concurring).

[41] *Id*. (Alito, J., concurring).

[42] *Id*. at 958 (quoting United States v. Jacobsen, 466 U.S. 109, 113 (1984)).

[43] *Id*. at 959.

the GPS device, focusing instead on a minor, technical trespass. Second, the trespass theory might bar short-term surveillance using GPS while allowing long-term surveillance using vehicles and aerial surveillance. It would also deny rights to someone acquiring a car after a GPS device is attached. Third, the coverage of the Fourth Amendment might vary based on property rules from state to state. And fourth, he said, the majority opinion ''will present particularly vexing problems in cases involving surveillance that is carried out by making electronic, as opposed to physical, contact with the item to be tracked.''[44]

Justice Alito granted that the *Katz* test ''is not without its own difficulties.''[45] He acknowledged its circularity and the likelihood that judges ''are apt to confuse their own expectations of privacy with those of the hypothetical reasonable person. . . .''[46] The *Katz* test also ''rests on the assumption that this hypothetical reasonable person has a well-developed and stable set of privacy expectations.''[47] Today's changing technological environment makes any such expectations uncertain.

Justice Alito concluded by arguing that legislative action would be superior to reliance on the courts for protection in this area. ''A legislative body is well situated to gauge changing public attitudes, to draw detailed lines, and to balance privacy and public safety in a comprehensive way,'' he said.[48] Justice Scalia had mused aloud to this effect during oral argument in the case.[49]

Though Alito's concurrence had a sharp tone and seemed at times to purposefully mistake the majority's meaning, this was not because of deep and long-running doctrinal differences. Rather, it was discomfort with the Scalia majority's experiment in reviving property as a lynchpin of the Fourth Amendment—in a ''high-tech'' case, of all things. As these disagreements demonstrate, Fourth Amendment

[44] *Id*. at 961–62. Justice Alito probably meant to include all the ways an item or person might be tracked or observed without a trespass, including monitored radio signals (analog or digital), visual or infrared spectral observation, laser, audio or electrical signatures, and other technologies yet to be developed.

[45] *Id.* at 962.

[46] *Id.*

[47] *Id*.

[48] *Id.* at 964.

[49] Transcript of Oral Argument at 26, 51–52, Jones, 132 S. Ct. 945 (2012) (No. 10-1259).

doctrine is up in the air. The *Jones* case illustrates well what a challenge that doctrine is.

II. Protecting Privacy—But How?

A point of agreement between majority and concurrence in *Jones* was the goal of preserving ''that degree of privacy against government that existed when the Fourth Amendment was adopted.''[50] But it is unclear what either side meant in saying that. The majority cited a ''particular concern for government trespass,''[51] but that calls out one touchstone for protecting this valuable good. It does not reveal what privacy is. For Justice Alito, protecting the earlier degree of privacy brought him to imagining analogies between GPS monitoring and anything that might have occurred in the late 18th century.[52] This opinion, too, left privacy's essence unstated.

Preserving some past state of affairs with relation to privacy cannot be a clear goal without a command of what the thing is. Though the Fourth Amendment does not require the Court to consider ''privacy'' per se, examining privacy and its protection can help rationalize protections against unreasonable searches and seizures for the future.

Privacy Is Control of Personal Information

The late 1960s and early 1970s were an era of privacy foment not unlike today, with books written on the subject during this period and state constitutions amended to protect privacy explicitly. In 1967, the year that the Supreme Court decided *Katz*, scholar Alan Westin characterized privacy in his seminal book *Privacy and Freedom* as ''the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others.''[53] This is the strongest sense of the word ''privacy'': the enjoyment of control over personal information.[54]

[50] *Id.* at 950 (majority opinion), 958 (Alito, J., concurring) (quotations omitted).

[51] *Id*. at 950 (majority opinion).

[52] *Id.* at 958 (Alito, J., concurring).

[53] Alan Westin, Privacy and Freedom 7 (Atheneum, 1967).

[54] We restrict ourselves here to information privacy. The Court has used ''privacy'' to describe interests quite distinct from information privacy, such as autonomy with respect to reproduction and physical intimacy. See, e.g., Roe v. Wade, 410 U.S. 113, 152 (1973) (''[T]he Court has recognized that a right of personal privacy, or a guarantee of certain areas or zones of privacy, does exist under the Constitution.''); but see Lawrence v. Texas, 539 U.S. 558, 578 (2003) (shielding ''private sexual conduct'' from government intervention under ''right to liberty'' guaranteed by Due Process Clause).

A tighter, more legalistic definition of privacy is ''the subjective condition that people experience when they have power to control information about themselves and when they exercise that power consistent with their interests and values.''[55] Given control over information about themselves, people will define and protect their privacy as they see fit.

Whether or not the Fourth Amendment requires courts to preserve some past level of privacy protection, giving individuals the same level of *control* over personal information is at least a meaningful and judicially administrable goal. One simply has to examine how people controlled information in the past and see that their ability to do so is maintained in the present.

In the late 18th century, people controlled information about themselves by how they arranged the things in the world. Retreating into one's home and drawing the blinds, for example, caused what happened inside to be ''private.'' Lowering one's voice to a level others could not hear made a conversation ''private.'' Draping the body with clothing made the details of its shapes, textures, and colors ''private.''

A list of all privacy-protecting decisions and behaviors would be very long, and it would not be helpful for crafting lasting privacy-protecting rules. But abstracting the nature of privacy protection can: People protect privacy by preventing others from perceiving things.

Perceiving something is being able to collect its representation in physical media. Photons are media that, upon reaching eyeballs, make a thing visible to a person. Sound waves reaching eardrums make a thing audible to a person. Particulates reaching nostrils or tongues make a thing perceptible by scent or taste. The surface of an object touched or pressed upon by skin can reveal its density, hardness, size, and weight. When a person's brain collects these data, he or she perceives the things in the world. This observer can quickly draw inferences about things, and about the people who own and control them.

When the photons, sounds waves, particulates, and surfaces that reveal things are not available, such things are not perceptible, and the drawing of inferences about people is blocked. This blocking,

[55] See Jim Harper, Understanding Privacy—and the Real Threats to It, Cato Institute Policy Analysis No. 520 (2004).

abstractly stated, is how people protect privacy. They did it this way in the late 18th century, and they do it this way today.

It is not enough, though, for people to withdraw into their homes, lower their voices, or wrap their bodies in clothes. These measures are necessary, but often insufficient, for concealing personal information. When people enter their homes, they do so relying on the aggregate of rights that prevent others from entering or accessing their homes to discover what goes on within. They rely on property rights. When people put clothing on their bodies to prevent photons from revealing the appearance of sensitive areas, they do so relying on protection against wrongful physical contact that might strip the body of its wrappings. That is the law of battery.

Sometimes people do rely almost entirely on physics to protect privacy, such as when they lower their voices in a public place. And sometimes they rely heavily on law, such as when they share information with a fiduciary or service provider bound to confidentiality by contract or regulation. Purely physical arrangements like whispering are an insufficient part of much privacy protection, though, and purely legal arrangements are rare. Most of the time, people protect privacy using natural laws and human laws together. Familiar Supreme Court cases illustrate this well.

In *Terry v. Ohio*, a plainclothes police detective observing three men acting strangely became suspicious that they were ''casing'' a store for a ''stick-up.''[56] Stopping them some blocks away and receiving an unsatisfactory answer to his questions, Officer Martin McFadden ''grabbed petitioner John W. Terry, spun him around so that they were facing the other two . . . and patted down the outside of his clothing.''[57]

The government had urged the Court to place brief ''stop and frisk'' incidents like this outside the Fourth Amendment, [58] arguing that police behavior short of a ''technical arrest'' or a ''full-blown search'' did not implicate constitutional scrutiny.[59] The Court rejected the idea that there should be a fuzzy line dividing ''stop and frisk'' from ''search and seizure.'' It wrote with precision about

[56] Terry v. Ohio, 392 U.S. 1, 6 (1968).

[57] *Id*. at 7.

[58] *Id*. at 16 n.12.

[59] *Id*. at 19.

the seizure, then the search, of Terry: ''[T]here can be no question . . . that Officer McFadden 'seized' petitioner and subjected him to a 'search' when he took hold of him and patted down the outer surfaces of his clothing.''[60] The seizure and search were reasonable and therefore constitutional.

Consider how physics and law worked in the *Terry* case. Terry and his fellows had not concealed their movements on the street. Officer McFadden, standing in a place he was legally entitled to be, had used his eyes to capture the photons bouncing off the men and the things around them. Visual observation and inference combined to give McFadden an idea that they might be armed.

After he seized Terry and turned him, Officer McFadden placed his hands on Terry's outer garments. Because he had reasonable suspicion, McFadden was allowed to touch Terry in a way that would otherwise be a battery. He used touch to ''seek[] out that which is otherwise concealed from view.''[61] The hard resistance and weight of the gun were different from the soft resistance of the human body, of clothing, papers, and such, and the gun was found.

The physical media by which information traveled to Officer McFadden in *Terry* are familiar to judges and Fourth Amendment law. Only a year after the *Katz* decision, the Supreme Court did not resort to ''reasonable expectations'' analysis. It wrote with confidence and clarity about the seizure of Terry, the search it facilitated, and their legal import.

But, as the *Jones* case illustrates, there are new information media in use today, including global positioning systems. Courts must understand and adapt to the new information environment if they are to judge modern cases with *Terry*-like certainty and precision.

III. Information Technology, Physics, and Law

Old media—the photons that allow us to see, the sound waves that allow us to hear, the molecules that allow us to smell and taste, and the surfaces that allow us to touch—have been augmented by new information media over the last 150 years. The roots of these

[60] *Id.* Cf. Terry, 392 U.S. at 35 (Douglas, J., dissenting) (''I agree that petitioner was 'seized' within the meaning of the Fourth Amendment. I also agree that frisking petitioner and his companions for guns was a 'search.'").

[61] The definition of ''search'' in Black's Law Dictionary 1349 (6th ed. 1990).

new media have their origins quite far back in human history, though, with the first use of spoken language. What is happening today in the ''digital revolution'' continues an evolution of abstraction and language that has been underway for some time. Digital sensors, computing, and communications are on a continuum with communications media with which the Framers of the Constitution were quite familiar.

Language is an information technology that began as a set of audible symbols for referring to the things of the world in an abstract way. Before language came about, the only information available to the early prehuman was first-hand observation or memory. It was truly an animal existence. Knowledge gained in a lifetime expired with the brain of each dying prehuman. But with spoken language, people could share information with one another. Information one person collected could travel to others, and, further shared, it could benefit people across distance and time. This information-sharing multiplied the benefits of living in groups.

When the first historical civilizations of the Near East, China, and Central America began to use logographic writing, the hieroglyphs they painted on cave walls or carved into stone tablets represented the things they spoke about in a new and different abstract form. This method of recording and recounting information was divorced from the vagaries of human memory or speech. Writing captured representations of information and made it available across time more accurately.

Phonogrammatic writing was a further improvement in information management. Humans began using symbols such as the Latin alphabet to represent sounds. Letters and other symbols improved on hieroglyphs by increasing the complexity of the ideas that writers could capture. Inventions like paper and ink allowed information processing and use to grow by decreasing the costs of recording, storing, and transporting written things.

By the late 18th century, writings on paper were commonplace. The literate men and women of the American colonies documented their lives, conducted business, and exchanged information using writings, books, and letters made of paper. They had used written communications both public and private to revolutionize political life on the American continent, so providing for control of information against government was a priority of the Framers.[62]

[62] See Anuj C. Desai, Wiretapping Before the Wires: The Post Office and the Birth of Communications Privacy, 60 Stan. L. Rev. 553, 564 (2007).

It was not ''papers'' as a particular form-factor for cellulose that the Framers had in mind when they wrote the Fourth Amendment. It was as information storage and exchange, including through letters sent in the mail.

Paper, Physics, and Law

Postal mail illustrates well how privacy protection worked at this time. Paper was an information medium that left the traditionally private enclave of the home as mail, yet it was treated so as to maintain privacy protections in the contents. This was done using a combination of physics and law.

As to the physics: Sealed postal mail is an arrangement of paper and the information printed on it so that the information is on the interior side of opaque material. The paper blocks photons, preventing light from reflecting off writings and revealing their content to observers.

Mail had uncertain legal privacy protection under English rule over the American colonies. In 18th-century Britain, the post office functioned as an intelligence organ for the British Crown. A ''secret office'' in the British postal service ''created intelligence by opening, detaining, or copying correspondence, and sending 'interceptions' to the Secretaries of State.''[63] The British post office began serving the American colonies in 1707 and was the most sophisticated postal service of the colonial era,[64] but it was under constant surveillance. British authorities sought to cut off the mail, they denied access to newspapers and other information by refusing delivery, and they monitored communications to get a sense of the public mood.[65]

When establishing their ''constitutional post,'' America's revolutionaries were acutely aware of the importance of postal privacy. Many of their communications, after all, had dealt with subject matter that the British Crown and Loyalists would have regarded as

[63] See *id*. at 560 (quoting Kenneth Ellis, The Post Office in the Eighteenth Century: A Study in Administrative History 62 (1958)).

[64] James Campbell, The Postal Monopoly Law: A Historical Perspective, in The Last Monopoly: Privatizing the Postal Service for the Information Age (Edward L. Hudgins ed., Cato Inst., 1996).

[65] Julie M. Flavell, Government Interception of Letters from America and the Quest for Colonial Opinion in 1775, 58 Wm. & Mary Q. 403, 406 (2001).

treasonous.[66] So it is not surprising that Congress's first comprehensive postal statute wrote the confidentiality of sealed correspondence into law with heavy fines for opening or delaying mail.[67]

The Supreme Court validated the protected status of mail under the Fourth Amendment in 1877. Its ruling in *Ex parte Jackson*[68] neatly illustrates the interplay of physics and law in privacy protection. Sealed mail, the content of which senders initially controlled using physics, got constitutional protection, while unsealed mail did not:

> [A] distinction is to be made between different kinds of mail matter—between what is intended to be kept free from inspection, such as letters, and sealed packages subject to letter postage; and what is open to inspection, such as newspapers, magazines, pamphlets, and other printed matter, purposely left in a condition to be examined. Letters and sealed packages of this kind in the mail are as fully guarded from examination and inspection, except as to their outward form and weight, as if they were retained by the parties forwarding them in their own domiciles. The constitutional guaranty of the right of the people to be secure in their papers against unreasonable searches and seizures extends to their papers, thus closed against inspection, wherever they may be.[69]

Letters and packages that enclosed their contents in opaque materials had the same security as letters kept in the home. Mailed matter left open had no physical security and thus had no constitutional security. The arrangement of things in the world made things private in a way the Fourth Amendment protects.

In the 19th and early 20th centuries, technological change in the information area began to increase. Louis Daguerre refined chemical

[66] See Desai, *supra* note 62, at 563–64.

[67] *Id*. at 566-57. In relevant part, the 1792 law says: ''[I]f any person, employed in any of the departments of the general post-office, shall unlawfully detain, delay, or open, any letter, packet, bag or mail of letters, with which he shall be entrusted, or which shall have come to his possession, and which are intended to be conveyed by post . . . , every such offender, being thereof duly convicted, shall, for every such offence, be fined not exceeding three hundred dollars, or imprisoned not exceeding six months, or both, according to the circumstances and aggravations of the offence.'' Act of Feb. 20, 1792, § 16, 1 Stat. 232, 236.

[68] 96 U.S. 727 (1877).

[69] *Id*. at 733.

photography in the early 1800s, for example, using the effects of light on certain chemicals to render accurate two-dimensional images of people or scenery. By the late 1800s, photographs of notable people might appear in newspapers distributed throughout a city, something that had never happened before. Indeed, Samuel Warren was reportedly inspired to join Louis Brandeis in writing the seminal *Harvard Law Review* article, ''The Right to Privacy,'' after a newspaper published photographs taken at the breakfast following his daughter's wedding.[70] Because information technology innovation was outpacing social norms, it was starting to have recognizable privacy consequences.

Electricity made its way from scientific curiosity into general use during the 1800s. Starting in the mid-1800s, American inventor Samuel Morse licensed several entrepreneurs to build telegraph lines along the U.S. East Coast and west to St. Louis. Morse had a hard time defending his patents, and telegraphy flourished throughout the sparsely populated West.[71] Electrical signals, modulated according to a language called ''Morse code,'' caused written information to begin moving across large distances at the speed of light.

In 1877, both Western Union and the Bell Company began establishing voice telephone services. Now the human voice began moving across distance at light speed in a way few people understood. This technology the Supreme Court confronted in *Olmstead v. United States*, the wiretapping case that the Court infamously got wrong.

Electricity, Physics, and Law: The Olmstead *Lie*

In *Olmstead*, warrantless wiretaps of bootleggers' homes and offices had secured the evidence needed to convict them. The Supreme Court rejected their Fourth Amendment challenge to the wiretapping and the conviction.[72] Writing for the majority, Chief Justice William Taft fixed on the material things listed in the Fourth Amendment's search and seizure clause—''their persons, houses,

[70] Samuel D. Warren & Louis D. Brandeis, The Right to Privacy, 4 Harv. L. Rev. 193 (1890).

[71] Gerald W. Brock, The Second Information Revolution 23 (2003).

[72] Olmstead v. United States, 277 U.S. 438, 466 (1928) (''We think, therefore, that the wire tapping here disclosed did not amount to a search or seizure within the meaning of the Fourth Amendment.'').

papers, and effects.''[73] Wiretapping had not affected any of the defendants' tangible possessions, he found, so it had not affected their Fourth Amendment rights.[74]

In dissent, Justice Louis Brandeis criticized the Court's literalism, and honed in on the Founders' libertarian individualism:

> The makers of our Constitution undertook to secure conditions favorable to the pursuit of happiness. They recognized the significance of man's spiritual nature, of his feelings and of his intellect. They knew that only a part of the pain, pleasure and satisfactions of life are to be found in material things. They sought to protect Americans in their beliefs, their thoughts, their emotions and their sensations. They conferred, as against the Government, the right to be let alone—the most comprehensive of rights and the right most valued by civilized men.[75]

Though not the first,[76] Brandeis's pronouncement remains a prominent and lasting tie in Supreme Court case law between the Fourth Amendment and privacy. The linkage is welcome, but Brandeis's passion for privacy was not matched by the quality of analysis needed for a sustainable privacy protection rule. Perhaps noting the similarities between telephone conversations and other communications might have helped. Phone conversations involved arrangements of things and law quite parallel to papers sent in the mail.

When Olmstead and his colleagues spoke on the telephone, a microphone in the handset produced a modulated electrical current that varied its frequency and amplitude in response to the sound waves arriving at its diaphragm. The resulting current was transmitted inaudibly and invisibly along the telephone line to the local exchange, then on to the phone at the other end of the circuit. At its destination, the signal passed through the coil of the receiver and produced a corresponding movement of the diaphragm in the

[73] *Id.* at 457, 464.

[74] *Id.* at 464.

[75] *Id.* at 478 (Brandeis, J., dissenting).

[76] See, e.g., Boyd v. United States, 116 U.S. 616, 622 (1886) (determining that compulsory production of a person's private papers in a forfeiture action is within the scope of the Fourth Amendment).

receiving phone's earpiece. This roughly reproduced the sound of Olmstead's conversations.

Importantly, the signal passing along the electric wire was invisible and inaudible to any human. It could not be perceived and was thus private. Overcoming the protection in physics for Olmstead's communications required some aid to ordinary perception. Chief Justice Taft described the means by which the government tapped the defendants' phones: ''Small wires were inserted along the ordinary telephone wires from the residences of four of the petitioners and those leading from the chief office'' of the conspiracy.[77] These wires carried the signal to a coil and diaphragm the government controlled. The diaphragm reproduced the sound of the voices that were otherwise unheard all along the wire. Government agents took the conversations down to use as evidence.

But later in his opinion, Taft denied those facts. Justifying his legal conclusions, he wrote: ''There was no searching. There was no seizure. The evidence was secured by the use of the sense of hearing, and that only.''[78]

The assertion was flat wrong, a serious and literal inconsistency with the realities of wiretapping. In fact, the physics of telephonic communications made the conversations inaudible in transit, and naturally private. To make inaudible things audible, the government introduced wires into the telephone system and captured the signals it carried. It converted those signals into the sounds they represented and amplified them to replicate conversations. Those actions are not ''the use of the sense of hearing, and that only.''

Recall that *Black's Law Dictionary* defines ''search'' as ''looking for or seeking out that which is otherwise concealed from view.''[79] Signals traveling along wires are concealed from ''view.'' They are neither visible nor audible. It takes some ''looking or seeking out'' to discover them. And this searching is what government agents did in *Olmstead*, contra Chief Justice Taft and the majority.

It is an open question—and a difficult one—whether the government's wiretapping searched or seized anything the Fourth Amendment protects: persons, houses, papers, and effects.[80] The insertion

[77] Olmstead, 277 U.S. at 457.

[78] *Id.* at 464.

[79] Black's Law Dictionary, *supra* note 61, at 1349.

[80] The Fourth Amendment does not protect against every property invasion, the Court has found, so a trespass on ''open fields'' to gather information does not violate the

of wires along an existing telecommunications line is arguably a seizure of the wires in that it converts them to a different use than that to which their owners put them.[81] In natural language and meaning, it is a search of the wires to gather and use the information flowing over them because it is the seeking out of things otherwise concealed from view. But maybe it was not the wires, but the signals traveling over the wires that were searched or seized when the government wiretapped Olmstead's phones.

Justice Pierce Butler's dissent, somewhat lost to history behind Justice Brandeis's flourishes, supplies some important information and reasoning about the tapping of telephone lines. Noting the use of telephones for ''official, social, business and personal affairs including communications that are private and privileged,''[82] Justice Butler wrote:

> The contracts between telephone companies and users contemplate the private use of the facilities employed in the service. The communications belong to the parties between whom they pass. During their transmission the exclusive use of the wire belongs to the persons served by it. Wire tapping involves interference with the wire while being used. Tapping the wires and listening in by the officers literally constituted a search for evidence. As the communications passed, they were heard and taken down.[83]

Butler saw the communication itself as something of the parties', contractually protected in transit by phone companies. It was not paper sent in the mail, but electrical signals sent over a wire. He also noted Olmstead's exclusive use of the wire. The signals on the wire had the same communicative uses and effects as writings in mail on a postal route, and they were similarly imperceptible to non-participants in the communication absent a search.

In his dissent, Justice Brandeis supplied another set of legal arrangements that cut in favor of Fourth Amendment protection for

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Fourth Amendment. See, e.g., Oliver v. United States, 466 U.S. 170 (1984); Hester v. United States, 265 U.S. 57 (1924).

[81] See *infra* text accompanying notes 111–21.

[82] Olmstead, 277 U.S. at 487 (Butler, J., dissenting).

[83] *Id.*

Olmstead's communications. Not only contract but criminal law protected the signals passing over the wires. A Washington statute made it a misdemeanor to ''intercept, read or in any manner interrupt or delay the sending of a message over any telegraph or telephone line.''[84]

Olmstead and his colleagues used the physics of the telephone, which renders oral communications invisible and inaudible in transit, to communicate with one another privately. Their use of the telephone was under contract with the phone company, which gave them exclusive and private use of that part of the phone company's property. Washington law further backed their privacy. The arrangement of things in the world entitled them to control over the content of their conversations—physics backed by law—and the *Olmstead* Court was wrong to find otherwise.

Bugging, Physics, and Law: The Sound-Controlling Qualities of Glass

Nearly 40 years later, the Supreme Court revisited electronic surveillance. It righted the wrong of *Olmstead* in the case of *Katz v. United States*.[85]

Charles Katz was a bookie, convicted because FBI agents ''had attached an electronic listening and recording device to the outside of the public telephone booth from which he had placed his calls.''[86] The decision does not reveal the bug's precise functionality, but it almost certainly worked as a telephone receiver does, by converting sound waves to electrical signals. Assuming those signals were stored on magnetic tape, a tiny magnetic pulse would have reoriented the ferrous molecules coating a tape to match the electrical pulses the sounds produced. When the time came to listen to the tape, a sensor run over it would pick up the magnetic orientation of the molecules and use them to vary electric signals driving a diaphragm. This mechanism would reproduce the sounds of Katz's conversations.

Crucially, the listening and recording devices were configured to be invisible to Katz. Unable to see the device, and seeing nobody near the phone booth in which he spoke, Katz believed his conversations were private. And they were—but for the FBI agents using

[84] Remington Compiled Statutes § 26518 (1922).

[85] 389 U.S. 347 (1967).

[86] *Id*. at 348.

high-tech gadgetry to hear what they otherwise could not have heard.

Justice Potter Stewart's majority opinion reversing Katz's conviction rested on the physical protection that Katz had given to his oral communications by going into a phone booth. The holding did not turn on his ''expectations of privacy'' as Justice John Harlan's concurrence would suggest.

Both parties to the case had fixated on location, assuming based on precedent that being ''in private'' garnered constitutional protection, while being ''in public'' meant all bets were off.[87] But an increasingly mobile society and advancing communications technology had rendered physical location—namely, the home and curtilage—a weak proxy for having the interest in security against government intrusion that the Fourth Amendment protects.

Justice Stewart wrote for the Court:

> [T]he Fourth Amendment protects people, not places. What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection. But what he seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected.[88]

In the paragraphs that followed, the Court discussed how Katz had preserved his privacy: he went into a phone booth made of glass that concealed the sound of his voice.[89] Against the argument that Katz's body was in public for all to see, the Court wrote, ''what he sought to exclude when he entered the booth was not the intruding eye—it was the uninvited ear.''[90]

Using the physical items around him to husband the sound of his voice, Katz protected his privacy. The government's use of a secreted

[87] *Id.* at 351.

[88] Katz, 389 U.S. at 351 (citations omitted). This language is not a crystal clear rule for determining what is protected and what is not, but the better reading is that ''may'' in the third quoted sentence indicates possibility—constitutional protection of Katz's conversation turns on some contingency. But what contingency? The most likely is right there in the sentence: whether something is ''preserve[d] as private.'' *Id.*

[89] *Id.* at 352.

[90] *Id*.

listening and recording device to enhance ordinary perception overcame Katz's control of that information. It was a Fourth Amendment search that was unreasonable without a warrant.

The majority decision did not raise or explore additional conditions controlling whether phone conversations occurring inside a telephone booth might be protected. The Court later noted that Katz ''justifiably relied'' on the privacy he enjoyed ''while using the telephone booth,''[91] but this is simply a natural conclusion from the fact that it is unreasonable for government agents to invade privacy as they had done. Unfortunately, Justice Harlan would expound on this conclusion in a way that distracted future courts from *Katz*'s actual holding.

Justice Harlan's Katz *Concurrence: Unworkable, Misapplied, and Anti-Privacy*

The ''reasonable expectation of privacy'' language Justice Harlan used in his solo concurrence has certainly enjoyed repetition, but it was not the holding in the case. He said:

> My understanding of the rule that has emerged from prior decisions 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.''[92]

This dictum would change the factual question the majority opinion turned on—Was the information physically and legally available to others?—into a murky two-part analysis with a quasi-subjective part and a quasi-objective part. Judicial administration of the Fourth Amendment has suffered ever since. Courts have regularly purported to apply the ''reasonable expectation of privacy'' test Justice Harlan debuted in *Katz*, but they have almost never applied it faithfully. The ''beeper'' cases that preceded *Jones* illustrate that well.

Claiming to address the defendant's subjective expectation of privacy in *United States v. Knotts*, for example, the Court wrote, ''Respondent Knotts . . . undoubtedly had the traditional expectation of privacy within a dwelling place.''[93] This is objective treatment—

[91] *Id.* at 353.

[92] *Id.* at 361 (Harlan, J., concurring).

[93] United States v. Knotts, 460 U.S. 276, 282 (1983).

what a normal person would expect—not what Knotts actually expected. The *Knotts* Court even cited a 1920s case as if it establishes Knotts's state of mind with respect to the comings and goings of a codefendant.[94] Fealty to Justice Harlan's language would have required Knotts's subjective expectation to be a fact found at trial, not a question of law.

The reasoning in *Knotts* relies heavily on *Smith v. Maryland*,[95] which dealt with the installation and use of a ''pen register'' to record all numbers called from a particular telephone line. The *Smith* Court likewise punted on the subjective part of Justice Harlan's ''reasonable expectation'' approach. It argued at length, without a factual basis and contra the petitioner's own argument, that Smith had no subjective expectation of privacy. The Court said it was ''too much to believe'' that a person dialing a phone could expect the numbers dialed to remain ''secret.''[96]

In *Karo*, the second of the two beeper cases, the Court stated, ''It is clear that the actual placement of the beeper into the can violated no one's Fourth Amendment rights.''[97] Either Karo had no subjective expectation of privacy with regard to the placement of a beeper in a can, or Karo's expectation was unreasonable, or both. The Court did not say.[98]

Misapplication of Harlan's dictum biases the Fourth Amendment against privacy. With the subjective portion of the ''reasonable expectation'' test elided in most cases, and the *Katz* majority's holding nowhere to be found, Justice Harlan's concurrence has been applied as a one-part test in which courts assume what ''expectations of privacy'' pertained and then assess them for reasonableness. This doctrinal line is contrary to the Fourth Amendment's focus, which

[94] ''But no such expectation of privacy extended to the visual observation of [codefendant] Petschen's automobile arriving on his premises after leaving a public highway, nor to movements of objects such as the drum of chloroform outside the cabin in the 'open fields.''' *Id.* (citing Hester v. United States, 265 U.S. 57 (1924)).

[95] 442 U.S. 735 (1979).

[96] Smith, 442 U.S. at 743.

[97] Karo, 468 U.S. at 711.

[98] As to monitoring the beeper once it was in a private residence, the decision gave no indication that any court ever actually examined the subjective expectation of the defendant. ''[P]rivate residences are places in which the individual normally expects privacy free of governmental intrusion not authorized by a warrant, and that expectation is plainly one that society is prepared to recognize as justifiable.'' *Id.* at 714.

is on government action: ''unreasonable searches and seizures.'' The Fourth Amendment as written takes private ordering as a given, saying nothing about the reasonableness of people in how they arrange or think about their affairs.[99]

The ''reasonable expectation of privacy'' test biases Fourth Amendment law against privacy in another way. Courts examine concealment of things under the ''reasonable expectation'' test, but they do not apply any such analysis when information is left exposed. In these cases, the ''plain view'' doctrine governs. It is a simple constitutional rule: If authorities acting within the law can see (or otherwise perceive) a thing, a person cannot make a Fourth Amendment claim against their observing it and acting on the knowledge of it.[100]

Applying Justice Harlan's concurrence to concealment but not to exposure places a special impediment on privacy. Somehow ''plain view'' is a simple factual question but ''plain concealment'' gets further consideration. It should be that the information one conceals from the general public, relying on physics and law, is also concealed from the government.

The ''mosaic theory,'' which the circuit court used to find a Fourth Amendment search of Antoine Jones through tracking of his vehicle, is part and parcel of ''reasonable expectations'' analysis. It does not rescue that analysis from its fundamental flaws. It is true that all the data one might collect about some dimension of a person's life are greater than the sum of their parts. But this insight gives courts nothing objective to work with. Deciding what quantity or quality of ''tiles'' completes a mosaic to violate one's ''reasonable expectation of privacy'' will be just as subjective as any other form of analysis.

Justice Harlan's concurrence is not a useful constitutional test. What reconciles it to the majority is treating his ''reasonable expectation'' language as a natural inference from the majority's holding. When one has arranged one's affairs using physics and law to conceal information, it is generally unreasonable for government agents to defeat those arrangements. It is thus reasonable to expect privacy.

Reasoning backward from ''reasonable expectations'' to protection of information has utterly confounded courts trying to apply Fourth

[99] U.S. Const. amend. IV.

[100] See, e.g., Coolidge v. New Hampshire, 403 U.S. 443, 465 (1971).

Amendment doctrine, however. The challenge will only grow if courts try to square ''reasonable expectations'' with continuing advances in information technology.

Happily, new buds of Fourth Amendment law are starting to sprout. These new cases dispense with *Katz* and ''reasonable expectations.''

Jones is one, and it has a sibling from a decade before: *Kyllo v. United States.*[101] The two cases position the Court to begin applying the Fourth Amendment as a law rather than relying on debilitating doctrine. *Kyllo* and *Jones* look for searches, look for seizures, and then determine whether such searches and seizures are reasonable in the absence of a warrant. They have laid early groundwork for Fourth Amendment law that meets the challenge of the information age.

IV. The Fourth Amendment After the Second Information Revolution

The information technologies that the Court dealt with in *Olmstead* and then *Katz* pale in power—or in their effects on privacy—to what historian of telecommunications and computing Professor Gerald W. Brock calls the ''Second Information Revolution.''[102] During the 20th century, the invention, development, and commoditization of electronics combined with a transition in the communications industry from regulated monopoly to flexibility and competition. The result was the bloom in computing and communication that marks recent decades.

The crucial invention for modern information processing was ''digitization.'' Digitization is the conversion of symbols such as numbers and letters or analog signals such as light and sound into signals computers can work with. These signals are usually talked about as ''1s'' and ''0s,'' building blocks of the binary codes that underlie all software and data. (Like other information technologies, digitization has an ancient history going back to the abacus.)

Conversion to 1s and 0s makes information easy to collect, store, process, and transmit—all very accurately. Many people do not understand this process, and society has yet to digest the meaning

[101] 533 U.S. 27 (2001).

[102] Brock, *supra* note 71, at 3.

of it for privacy or other social mores. But, importantly here, courts have yet to fully understand or digest the meaning of these new information technologies. They have yet to recognize the parallels between digitized information and less highly abstracted information in other writings.

The court system has given some recognition to digital documents, of course. The federal trial courts recognize, as they must, that digital representations of information are equivalent to papers for purposes of both filing and discovery.[103] Writings on paper, analog electric signals, sound waves produced by voices, and digitized documents are all just different media for conveying information.

The representation of personal information on media other than paper should matter little given the Fourth Amendment's goal of protecting against unreasonable searches and seizures. The same information about each American's life that once resided in a desk drawer or simply in one's memory is now recorded on digital media. The subject matter held in digital documents and communications is at least as extensive and intimate as what is held on paper records, and probably much more so.[104]

Courts should treat digital representations of information as constitutional papers or digital effects that the Fourth Amendment secures. If the Fourth Amendment does not extend to information in these other media, the goal of protecting privacy that the majority and concurrence agreed to in the *Jones* case will not be met. Constitutional privacy protections should not erode because the Framers failed to anticipate digital technologies.

United States v. Jones is the second in a pair of ''high-tech'' Fourth Amendment cases that have come to correct outcomes, though they lack sufficient clarity in their reasoning. *Jones* joins 2001's *Kyllo* decision in angling toward a modern but timeless—and, most importantly, manageable—Fourth Amendment jurisprudence. Well applied, they may allow a move toward interpreting the Fourth Amendment as a law—without the interposition of confusing and unpredictable doctrine.

[103] See Comm. on Rules of Practice and Procedure of the Judicial Conference of the U.S., Report of the Civil Rules Advisory Committee 2, 18–22 (May 27, 2005).

[104] See Mary Czerwinski et al., Digital Memories in an Era of Ubiquitous Computing and Abundant Storage, Comms. of the ACM 45, Jan. 2006, available at http://research.microsoft.com/pubs/79673/CACMJan2006DigitalMemories.pdf.

Kyllo: *High-Tech Search*

In *Kyllo v. United States*, agents of the U.S. Department of the Interior suspected that Danny Lee Kyllo was growing marijuana in his home using high-intensity lamps.[105] The agents aimed an Agema Thermovision 210 thermal imager at his triplex on Rhododendron Drive in Florence, Oregon. The imager detected significantly more heat over the roof of the garage and on a side wall of Kyllo's home than elsewhere on the premises. Using this and other information, the agents obtained a warrant, searched the home, and found the drugs they suspected.

Thermal-imaging cameras are information technology. They detect radiation in the infrared range of the electromagnetic spectrum (that is, with longer wavelengths than visible light), and they produce images of that radiation, called thermograms, by representing otherwise invisible radiation in the visible spectrum. Because the amount of radiation an object emits increases with temperature, one can see variations in temperature as the government agents did in *Kyllo*.

The Supreme Court found a Fourth Amendment violation in the use of thermal imaging on a home without a warrant. ''Where, as here, the Government uses a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion,'' Justice Scalia wrote for the Court, ''the surveillance is a 'search' and is presumptively unreasonable without a warrant.''[106] He remanded the case to the lower court.[107]

As Katz had done by entering a telephone booth, Kyllo used the walls of his house to conceal from others what goes on within, including the temperature of its rooms. As a matter of fact—not expectation—Kyllo had privacy in the temperature of the rooms of his home. When the government used out-of-the-ordinary sense-enhancing technology to ''see'' temperatures that were not otherwise in view, it was search, unreasonable without a warrant, and it violated his Fourth Amendment rights.[108]

[105] Kyllo, 533 U.S. at 29.

[106] *Id*. at 40.

[107] *Id*. at 41.

[108] *Id*. at 40.

This was the rationale of the *Katz* majority—that a person who has concealed information from the general public has also concealed it from the government. Other than in certain narrow cases, such as exigency, the government cannot overcome his or her privacy with a search except after getting a warrant.

Jones: *Seizure in the Information Age*

United States v. Jones pairs nicely with *Kyllo* as a high-tech seizure case. The pairing works, at least, if one allows the *Jones* Court's rationale in property to take precedence over the language it used. The Court emphasized the ''seizure'' portion of the government's behavior—the attachment of the device to Jones's vehicle. That seizure was distinct in time, and it involved different activity from the search it enabled. Alas, the Court largely collapsed the seizure of the vehicle with the monitoring of Jones's movements over the ensuing four weeks, calling them together a ''search.''

The Supreme Court's treatment of the phrase ''searches and seizures'' in the Fourth Amendment often takes it as a sort of compound noun. The Court rarely defines ''seizure'' distinct from ''search.''[109] In *Arizona v. Hicks*,[110] for example, the Court characterized the movement of stereo equipment in a home to gather a serial number as simply a ''search.'' It might have characterized it more precisely as a seizure facilitating a search.

Possession is ''[h]aving control over a thing with the intent to have and to exercise such control.''[111] It is ''[t]hat condition of facts under which one can exercise his power over a corporeal thing at his pleasure to the exclusion of all other persons.''[112] Houses and apartments, being closed and typically locked by their owners, are quintessential havens for property. By long-standing custom and law, the things inside dwellings are arranged as their owners would have them and are not available to others to touch or move. The Court granted that Hicks's possession of his turntable had been

[109] United States v. Jacobsen, 466 U.S. 109, 114 n.5 (1984) (''the concept of a 'seizure' of property is not much discussed in our cases''); but see Soldal v. Cook County, 506 U.S. 56 (1992) (holding that seizure of mobile home violates Fourth Amendment).

[110] 480 U.S. 321 (1987).

[111] Black's Law Dictionary, *supra* note 61, at 1163.

[112] *Id*.

usurped, but turning it over did not ''meaningfully interfere'' with his ''possessory interest,'' so it was not a seizure.[113]

While achieving the same result by treating the initial movement of the stereo as a ''search,'' the *Hicks* Court invited confusion as to what constitutes a seizure. Litigants in Fourth Amendment cases may argue that small seizures, or not very big seizures, are not seizures under *Hicks*. Under the better view, the stereo equipment was not law enforcement's to move, and in the moment it was moved there was a seizure but no search.

Which word the Court used in *Hicks* or in *Jones* did not affect the outcomes. But information technology challenges that sloppy practice of collapsing and confusing ''search'' with ''seizure.'' In the information technology context, a property seizure alone can have significant effects on the security of the individual that the Fourth Amendment was meant to protect.

Posit a government agent who picks up a smartphone left unlocked on a cocktail table while its owner is in the restroom. In a few brief moments, she downloads a ''parental control'' application that sends a copy of each text message, each website visited, and each posting to social networks to an address she designates. Restoring the imperceptibly different phone to its original place before the owner returns, the government agent has committed no search, and she denied the owner no ''possessory'' interest. But the phone now reveals comprehensive information to a stranger about the owner's intimate communications, business interactions, and much more. The phone itself, and the digital effects the phone produces, are within the ambit of what the Fourth Amendment is meant to secure.

Nearly always in the past, possession of some item was the aspect of ownership that was material to Fourth Amendment cases. Casual use of language in *Knotts*, *Karo*, and related cases and commentary seems to narrow the question of property seizure to only whether defendants lost ''possessory'' interest in articles they bought and transported.[114] This methodology is not an intellectually sound approach to property, and it does not translate to the information technology context. Courts should not treat deprivation of ''possessory interests'' as the only type of constitutional ''seizure.''

[113] Hicks, 480 U.S. at 324.

[114] Knotts, 460 U.S. at 280–81; Karo, 486 U.S at 712.

Possession is but one of the rights in the ''bundle of sticks'' that makes up the property right.[115] In his essay, ''Ownership,'' legal philosopher Tony Honoré articulated the incidents of ownership common to ''mature legal systems.''[116]

> Ownership comprises the right to possess, the right to use, the right to manage, the right to the income of the thing, the right to the capital, the right to security, the rights or incidents of transmissibility and absence of term, the duty to prevent harm, liability to execution, and the incident of residuarity.[117]

The government invaded several of these property rights when it installed a GPS device on Jones's vehicle. The government arguably invaded Jones's right to possess his vehicle during its exercise of dominion to install the GPS device, of course. But if that invasion is not significant enough, the government also invaded the trio of rights to use, manage, and enjoy income.

Government agents used the car during the entire period of the device's installation to transport their monitoring tool. Indeed, they made the same use of the vehicle for transporting their device that Jones made of it for transporting himself, his things, and his guests.

The right to manage is ''the right to decide how and by whom the thing owned shall be used.''[118] This right the government invaded by making the car an auxiliary of its surveillance project. Government agents decided how they would use the vehicle, though it was not theirs.

Government agents also invaded the right to the income, using the car to produce digital records for their use. Income need not be pecuniary. As Honoré wrote, ''[R]ent-free use or occupation of a home is a form of income.''[119] So is using another's property for the production of data. GPS technology uses satellite signals to triangulate on precise location observations, and captures these data in highly useful digital form at regular intervals for whatever period

[115] See Andrus v. Allard, 444 U.S. 51, 65–66 (1979).

[116] Tony Honoré, Ownership, in Making Law Bind: Essays Legal and Philosophical 161, 162 (1987).

[117] *Id.* at 165.

[118] *Id.* at 168.

[119] *Id*. at 169.

of time the operator of the GPS device chooses. Income is the enjoying of emoluments that an item of property produces, whatever their nature. The government reaped a bevy of data, income from the use of Jones's car.

Treating property slightly differently, the Supreme Court has emphasized the ''right to exclude others'' as ''one of the most essential sticks in the bundle of rights that are commonly characterized as property.''[120] One is not ''excluded'' from the property of another when attaching items to it and enjoying the benefits of that attachment. A constitutional seizure can occur when the government invades a property right other than possession.

The point is not whether one has committed the 18th-century tort of trespass,[121] but whether there has been any seizure, which triggers the inquiry into its reasonableness. There was a seizure in *Jones*—not of the right to possession, but of other property rights. Jones's vehicle was not the government's to convert to their surveillance purposes. Doing so was, constitutionally, a seizure.

Reasonable Seizures and Searches

It may be tempting to dismiss ''minor'' trespasses on property rights as nonseizures. It is true that some seizures do not affect the values that the Fourth Amendment protects. But this is a factor to consider when one decides whether or not a seizure or search is reasonable. The *Terry* Court, recall, declined to collapse ''seizure'' and ''reasonableness'' together and find that a reasonable and brief seizure is not a seizure at all.[122] That Court articulately placed arguably minor intrusions within the scope of the Fourth Amendment, then found them reasonable thanks to ''specific and articulable facts which, taken together with rational inferences from those facts, reasonably warrant that intrusion.''[123]

There will be reasonable seizures. An *ad absurdum* helps to illustrate what a reasonable seizure looks like. Say a police officer stumbles on a cracked sidewalk and reaches his hand out, steadying

[120] Kaiser Aetna v. United States, 444 U.S. 164, 176 (1979); see also Dolan v. City of Tigard, 512 U.S. 374, 384 (1994); Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1044 (1992); Nollan v. California Coastal Comm'n, 483 U.S. 825, 831 (1987).

[121] Cf. Jones, 132 S. Ct. at 957 (Alito, J., concurring).

[122] Terry, 392 U.S. at 19.

[123] *Id.* at 21.

himself on the fender of a parked car. A court could find that this is a seizure—it converts the car to law enforcement use—but it is a reasonable one. The officer makes use of another's property for good reason and with negligible consequence.

There will also be reasonable searches. Using binoculars to search a beach for a particular person would probably be reasonable, where using military-grade remote-sensing equipment to read over the shoulder of a beachgoer from a mile away probably would not. The dividing line between plain-view ''looking'' and constitutional ''searching'' will always be technologically contingent. Future courts in hard cases can make judgments about whether some technology has become common enough to be thought of as an ''ordinary'' way of perceiving the world.

When determining whether a seizure or search implicating the Fourth Amendment has occurred, there is no need to weigh or balance such things as the quantity of data a device produces, the quality or intimacy of the data, or the ''power'' of a device to reveal sensitive information. These factors are relevant when considering whether a seizure of things the Fourth Amendment protects (or a search facilitated by a seizure) is reasonable. The invasion of a property interest in one's person, house, papers, or effects is a constitutional seizure that merits that examination for reasonableness.

Courts should treat the question of seizure and search as binary, like pregnancy, with the flex coming into constitutional decision-making where it should, at ''reasonable.'' The Court in *Jones* should have made clear that there was a constitutional seizure when the government placed the GPS device on the car. The question was whether or not it was reasonable. Given the use of that seizure to conduct extensive information gathering without a warrant, it was not.

Jones, of course, was also a colorable search case. But it was a close call as a search case. Government agents used high-tech equipment to seek out information that was concealed from view. But Jones's movements were not concealed from view by physical barriers or law, which are absolute. They were concealed by permeable barriers of time and distance—the weight of effort it would have taken to monitor and note all his movements without outré technology.

The use of a high-tech device confesses that the sum total of Jones's movements were quite difficult to observe. The GPS device was

a ''technological enhancement of ordinary perception'' along the dimensions of time and space.[124] It recorded thousands and thousands of observations over a four-week period, taking things unseen and making them seen, something like shifting infrared radiation into the visible spectrum. Such enhancement of ordinary perception is a ''search,'' but only arguably so, and as a judgment call for courts.

The attachment of a GPS device to Jones's car—the seizure—is what made *Jones* a clear Fourth Amendment case. Jones's car was converted to the government's use, a minor seizure with major effects on his privacy and his constitutional rights.

Conclusion

Black's Law Dictionary defines ''doctrine'' as a ''rule, principle, theory, or tenet of the law.''[125] Doctrine often acts as a helpful summary or guide to the law, such as the ''clean hands'' doctrine holding that an equity court will not give relief to a party that is a wrongdoer itself. But sometimes doctrine becomes a stack of shibboleths that bloats court decisions and provides only the appearance of reasoning. Fourth Amendment doctrine after *Katz v. United States* falls into the latter category.

Rather than using doctrine, courts should once again administer the Fourth Amendment as a law. With intimate knowledge of how information technologies work, they should examine cases based on the terms of that amendment. Courts should determine whether information that law enforcement acquired was perceivable. If not, they should determine whether it was a search or a seizure that revealed it. They should determine whether that search or seizure was reasonable.

Treating the Fourth Amendment as a law would in no way release judges from the obligation to judge. They would face tough calls, such as the question of whether using drones to track a suspect like Jones for four weeks would constitute a search.[126] Such tracking would not be a product of property seizure; it would be observation of things that are literally exposed, but over a span of time so long that perhaps their observation is a search.

[124] Kyllo, 533 U.S. at 33.

[125] Black's Law Dictionary, *supra* note 61, at 481.

[126] Cf. California v. Ciraolo, 476 U.S. 207 (1986).

Wi-Fi—a popular technology that allows electronic devices to exchange data wirelessly using radio waves—may become the first digital technology that people perceive without search. So many devices spontaneously discover Wi-Fi signals that becoming aware of a signal is commonplace. This awareness is distinct from actually gathering the data the signal carries, of course, which is still very rare. There is judging to be done.

In the vast majority of cases, however, dispensing with the doctrine that has grown up around the Fourth Amendment would be a tremendous aid to courts. Rather than reasoning backward from ''reasonable expectations,'' courts can and should evaluate in any given case whether there has been a search or a seizure. This determination turns on facts and law: whether there were physical and legal barriers preventing the government's accessing the information or the thing. The legal barriers that protect privacy include not just ''possessory interests,'' but the full law of property, the entire bundle of sticks that excludes all others from one's things.

Contractual agreements are how people buy and sell property, and how people deploy their property to the benefit of others in mutual exchange. When contractual agreements or regulations create legal barriers to accessing information, that information is private. The Supreme Court should recognize Fourth Amendment backing for contractual privacy protections just like it does for property law, battery, and every other legal protection people draw around their persons, houses, papers, and effects.

This is where Justice Sotomayor's opinion in *Jones* is the most prescient. The third-party doctrine, which the Court has used to dispense with privacy in a host of cases since 1974, was wrong at its origin—and it grows more wrong with each passing year.[127] ''This approach is ill suited to the digital age,'' as Justice Sotomayor wrote.[128]

Restoring the Fourth Amendment will require judgment calls and de-warping of doctrines that have grown up thanks to *Katz* and the ''reasonable expectation of privacy'' test. These judgment calls will happen in a context that is familiar to legal practitioners, though,

[127] See Jim Harper, Reforming Fourth Amendment Privacy Doctrine, 57 Am. U. L. Rev. 1381, 1401 (2008).

[128] Jones, 132 S. Ct. at 957 (Sotomayor, J., concurring).

including law enforcement. Fourth Amendment cases should turn on facts and law, not broad societal pronouncements about privacy and ''reasonable expectations.''

The Fourth Amendment says: ''The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated.'' Treating this language like a law would aid greatly in its administration. Though privacy is an important touchstone, protecting privacy should not be the Court's goal. Rather, the Court should enforce the legal guarantee against unreasonable searches and seizures. Doing so would shelter individuals' privacy-protective behaviors and decisions. Let people determine for themselves what level of privacy they want.