Technologically Enhanced Visual Surveillance and the Fourth Amendment: Sophistication, Availability and the Expectation of Privacy

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TECHNOLOGICALLY ENHANCED VISUAL SURVEILLANCE AND THE FOURTH AMENDMENT: SOPHISTICATION, AVAILABILITY AND THE EXPECTATION OF PRIVACY

Clifford S. Fishman*

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I. INTRODUCTION

Privacy is a very recent development in the evolution of civilization. Our ancestors lived in small tribal groupings where, presumably, anything one did or possessed was visible to the entire community. Residential privacy probably became generally available only when humankind learned how to fashion and heat individual dwellings. This connection between privacy and technology, in fact, has persisted throughout most of our history. Enhancements of privacy became possible only as technology permitted improvements in the quality of life generally. The discovery and mastering of electricity, for example, permitted the invention of the telephone, which enhanced dramatically people's ability to communicate privately. Only recently have we come to see technology as a potential threat, as well as a boon, to privacy.

The Fourth Amendment to the Constitution, which guarantees "[t]he right of the people to be secure, in their persons, houses, papers and effects, against unreasonable searches and seizures," established protection from unwarranted governmental intrusion as a core American value. While the Fourth Amendment has been the subject of extensive litigation for the past century, most of this litigation has focused on arrests and other physical seizures of individuals or personal property, and on the legal prerequisites for physical entry into, and search of, private premises. Comparatively few decisions have focused on the implications of visual surveillance or upon surveillance technology.
Since 1983, however, seven Supreme Court decisions have focused at least in part upon application of the Fourth Amendment to technological enhancement of, or technological substitution for, visual surveillance: United States v. Dunn¹ and Texas v. Brown⁶ (artificial illumination); United States v. Knotts⁷ and United States v. Karo⁸ (electronic tracking devices); California v. Ciraolo⁹ and Florida v. Riley¹⁰ (aerial surveillance); and Dow Chemical Co. v. United States¹¹ (image-magnifying aerial photography). Reaction to many of these decisions has been highly critical.¹²

In six of the seven cases, investigators refrained from intruding physically into a location protected by the Fourth Amendment. The Supreme Court held in those cases that the surveillance was not a search. Only in Karo did investigators effect a kind of physical intrusion, and in that case the Court concluded that a search had occurred. This does not mean, however, that the Court has equated physical intrusions and searches in a simplistic manner. Particularly in those cases involving the use of sophisticated surveillance technology, the Court has proceeded cautiously, basing its decisions on narrow factual grounds, rather than taking the opportunity to enunciate or develop sweeping, general principles.

Still, certain patterns do emerge, or at least can be inferred, from this body of case law. In deciding whether technologically enhanced visual surveillance is a search, the Court, sometimes implicitly and sometimes explicitly, has consid-

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ered three factors. Two relate directly to technology: the extent to which the equipment enhanced the officers’ natural senses, and the availability of such equipment to the general public. The third factor that the Court has considered is the nature of the information sought or discovered by the surveillance.

This Article analyzes these seven decisions. Part II provides an overview of basic Fourth Amendment principles. Part III reviews and critiques the Court’s treatment of technology, specifically artificial illumination, the use of electronic tracking devices, aerial surveillance and image-magnifying technology. Part IV examines how the nature of the information sought and obtained by the surveillance has influenced the decisions at which the Court arrived. Finally, the Article summarizes and evaluates this case law.

II. THE FOURTH AMENDMENT

A. The Exclusionary Rule

The Fourth Amendment provides:

The right of the people to be secure, in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.'

13. U.S. CONST. amend. IV.

14. "Warrantless searches are presumptively unreasonable, though the Court has recognized a few limited exceptions to this general rule." United States v. Karo, 468 U.S. 705, 717 (1984). In certain circumstances, however, searches and seizures are lawful even if no warrant has been obtained, so long as probable cause existed at the time the search or seizure was conducted. Such is the law governing searches of automobiles. See United States v. Ross, 456 U.S. 798 (1982) (scope of search defined by places where there is probable cause to believe object may be found). Similarly, police may lawfully search private premises without a warrant in exigent circumstances. Warden v. Hayden, 387 U.S. 294 (1967). In other circumstances, searches and seizures are lawful even in the absence of probable cause, so long as a "reasonable suspicion" of wrongdoing existed at the time. For example, police may temporarily stop and detain ("seize") an individual for investigation without either a warrant or probable cause, so long as reasonable suspicion exists to believe that the individual may be involved in criminal activity. Florida v. Royer, 460 U.S. 491 (1983). If the officer also has a reasonable suspicion that the person he seeks to stop and question is armed, the officer may also conduct a superficial frisk ("search") of the individual. Terry v. Ohio, 392 U.S. 1 (1968).

known as the "fourth amendment exclusionary rule," is intended to deter law enforcement officials from conducting unlawful searches and seizures by depriving them of the incentive to do so.16

B. The Definition of "Search"

Because the Fourth Amendment protects a person only against "unreasonable searches and seizures," a defendant may attempt to challenge how the police or prosecution obtained evidence only if he can first show that the authorities obtained that evidence by conducting either a "search" or a "seizure."17 The scope of the Fourth Amendment therefore depends upon the definitions given to the words, "search" and "seizure."18 The term "seizure" has been the subject of extensive judicial analysis, but this body of case law has little relevance to scientifically enhanced visual surveillance.19

The term "search" has been the subject of even greater judicial scrutiny. Until 1967, the Supreme Court had consistently held that investigative conduct by police did not constitute a search unless that conduct physically invaded a defendant's premises, property, or possessions.20 Under this view, neither wire-
tapping nor bugging constituted a search, so long as investigators managed to avoid such a physical invasion.

In *Katz v. United States*,\(^2\) however, the Supreme Court concluded that placing an electronic bug on the outside of a telephone booth to overhear Katz' telephone conversation constituted a search even though there was no physical penetration into the booth itself.\(^2\) In arriving at this conclusion, the Court emphasized that the interests protected by the Fourth Amendment were not limited to those of property and freedom from physical trespass. Rather, the Court emphasized that

> the 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.\(^2\)

Nevertheless as Justice Harlan stressed in his concurring opinion, "'[t]he question, however, is what protection [the Fourth Amendment] affords to those people.'"\(^2\) Justice Harlan reasoned that Fourth Amendment protection exists only if two conditions are present: "'first that a person ha[s] exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"\(^2\)

Justice Harlan's formula has become the basic definition of what the Fourth Amendment protects.\(^2\) If a defendant seeks to suppress evidence or information obtained by a law enforcement official, he must first establish that the official engaged in conduct which intruded upon his "'justifiable' . . . 'reasonable' . . . or 'legitimate' expectation of privacy.'" If the defendant is unable to establish that the investigators' conduct intruded upon his reasonable expectation of privacy, then no "search" has occurred, no interest protected by the Fourth Amendment was infringed upon, and the defendant is not entitled to have the manner in which the evidence or information was obtained measured against Fourth Amendment standards.

\(^{21}\) 389 U.S. 347 (1967).
\(^{22}\) *Id.* at 350-51.
\(^{23}\) *Id.* at 352-53. Although the agents had probable cause to believe that Katz' conversations would be incriminating and although they acted with restraint by listening only when Katz was in the booth, the Court suppressed the agents' testimony as to what Katz said because the agents had failed to obtain a warrant authorizing the use of the listening device. *Id.* at 356-57.
\(^{24}\) *Id.* at 361 (Harlan, J., concurring).
\(^{25}\) *Id.*
\(^{26}\) The Court has commented that "'[c]onsistently with *Katz*, this Court uniformly has held that the application of the Fourth Amendment depends on whether the person invoking its protection can claim a 'justifiable,' a 'reasonable,' or a 'legitimate expectation of privacy' that has been invaded by government action."

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22. *Id.* at 350-51.
23. *Id.* at 352-53. Although the agents had probable cause to believe that Katz’ conversations would be incriminating and although they acted with restraint by listening only when Katz was in the booth, the Court suppressed the agents’ testimony as to what Katz said because the agents had failed to obtain a warrant authorizing the use of the listening device. *Id.* at 356-57.
24. *Id.* at 361 (Harlan, J., concurring).
25. *Id.*
26. The Court has commented that ‘[c]onsistently with *Katz*, this Court uniformly has held that the application of the Fourth Amendment depends on whether the person invoking its protection can claim a ‘justifiable,’ a ‘reasonable,’ or a ‘legitimate expectation of privacy’ that has been invaded by government action.’ *Smith v. Maryland*, 442 U.S. 735, 740-41 (1979) (quoting *Katz v. United States*, 389 U.S. 347, 361 (1967) (Harlan, J., concurring); *see Rakas v. Illinois*, 439 U.S. 128, 143 n.12 (1978) (discussing reasonable expectation of privacy); *United States v. White*, 401 U.S. 745, 752 (1971) (same). *See generally Note, A Reconsideration of the *Katz* Expectation of Privacy Test, 76 Mich. L. Rev. 154 (1977) (reviewing *Katz* doctrine and analyzing possible minimal thresholds for reasonable expectations of privacy).
No definitive answer has yet emerged as to how to assess whether an expectation of privacy is "legitimate," but the Court has observed that it would, of course, be merely tautological to fall back on the notion that those expectations of privacy which are legitimate depend primarily on cases deciding exclusionary-rule issues in criminal cases. Legitimation of expectations of privacy must have a source outside the Fourth Amendment, either by reference to concepts of real or personal property law or to understandings that are recognized and permitted by society.27

As this passage suggests, deciding whether privacy expectations are in fact legitimated, either by "reference to concepts of . . . property law or to understandings that are recognized and permitted by society," has on occasion been a difficult and divisive process. Substantial controversy has focused on the proper application of two concepts that limit the legitimacy of privacy expectations, and thereby, the scope of the term "search" and the application of the exclusionary rule.

1. Knowing Exposure

The Court in Katz observed that "what a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection."28 If a person knowingly exposes something to the public, the very fact of that exposure deprives him of any reasonable expectation of privacy he may otherwise have had. Surveillance of that conduct or acquisition of that information by the police is therefore not a Fourth Amendment search. "The 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."29

Granted that "what a person knowingly exposes to the public" is not protected by the Fourth Amendment, application of that principle can nonetheless raise troubling questions. In particular, issues arise concerning the degree of exposure, and the degree of knowledge of such exposure, that suffices to deprive behavior or conditions of their Fourth Amendment protection.30

2. Assumption of Risk

Even if a person exposes information or conduct to only a chosen few, he has no Fourth Amendment complaint if one of his confidants is a police in-
former or undercover agent who reports what he has seen and heard to the authorities. "The risk of being ... betrayed by an informer or deceived as to the identity of one with whom one deals is ... the kind of risk we necessarily assume whenever we speak." As this is true in life generally, so too with regard to the Fourth Amendment. The amendment provides no protection to "a wrongdoer's mistaken belief that a person to whom he voluntarily confides his wrongdoing will not reveal it."

The "knowing exposure" and "assumption of risk" limitation on Fourth Amendment protection could seriously undermine individual privacy if they are applied in a "value-neutral" fashion. Justice Marshall has cautioned, for example, that "whether privacy expectations are legitimate within the meaning of Katz depend ... on the risks [an individual] should be forced to assume in a free and open society .... [C]ourts must evaluate the 'intrinsic character' of investigative practices with reference to the basic values underlying the Fourth Amendment." A majority of the Court has conceded that, in some situations, "a normative inquiry" might sometimes be necessary.

It should surprise no one that the Court has on several occasions divided sharply when pondering such issues. The application of these questions to technologically enhanced visual surveillance provides dramatic examples of such disagreement.

III. TECHNOLOGY: SOPHISTICATION AND AVAILABILITY

The Supreme Court has considered the Fourth Amendment implications of scientifically enhanced visual surveillance in four contexts: artificial illumination; use of electronic tracking devices; aerial surveillance; and use of various image magnifying devices (binoculars and sophisticated photography). In deciding whether scientifically enhanced visual surveillance constitutes a search, the Court has applied the same test that it has applied in more traditional contexts. This test was originally coined by Justice Harlan in his Katz concurrence: the surveillance is a search for Fourth Amendment purposes only if it intruded upon an expectation of privacy that society is willing to accept as

31. Hoffa v. United States, 385 U.S. 293, 301-03 (1966); accord Lewis v. United States, 385 U.S. 206, 210 (1966). Although Hoffa and Lewis were decided prior to Katz, the Fourth Amendment principles enunciated in those decisions have been reiterated in numerous cases subsequent to Katz. See, e.g., United States v. Caceres, 440 U.S. 741 (1979) (holding that surreptitious recording of conversation by one party does not constitute search); White v. United States, 401 U.S. 745 (1971) (same).
33. Id. at 302.
35. Id. at 740 n.5.
36. Only once has the Court considered whether an aspect of scientifically enhanced visual surveillance should be classified as a seizure. See infra note 65 and accompanying text (discussing United States v. Karo, 468 U.S. 705 (1984), in which Court held installation of beeper did not constitute a seizure). Judicial attention has therefore focused almost exclusively on application of the term "search."
“reasonable” or “legitimate.” The Court’s decisions have focused, either explicitly or implicitly, on two aspects of the technology: the extent to which the equipment enhanced the officer’s natural senses and the availability of such equipment to the general public. The more revealing and sense-enhancing that the equipment is, the more likely a court will consider the use of such equipment to be a search. On the other hand, the more widely available a particular item of surveillance equipment is, the less likely it is that its use will be considered a search.

A. Artificial Illumination: The Brown and Dunn Decisions

The Court first considered the Fourth Amendment implications of enhanced visual surveillance in the 1927 decision of United States v. Lee, and concluded that it does not constitute a search for law enforcement officials on the high seas to use a search light to enable them to see contraband on the deck of a ship. Similarly in the 1983 decision of Texas v. Brown the Court concluded that it does not constitute a search for an officer to shine his flashlight to illuminate the interior of a lawfully stopped vehicle. In explaining that aspect of the Brown decision, the Court commented that “the use of artificial means to illuminate a darkened area simply does not constitute a search, and thus triggers no Fourth Amendment protection.”

In each case, the officers were in a public place and the items under surveillance were “knowingly exposed” to public view. In Lee, the ship was on the high seas, and the items were plainly visible on the deck. In Brown, the automobile was on a public thoroughfare, and the balloon was in the passenger compartment. The search light and flashlight used in these cases were implementations that were technologically simple and widely available to the public. The information sought was not particularly personal or private.

Although neither case presents analytical difficulties, Brown nevertheless merits some attention. On its facts, the case merely holds that it does not

37. See supra text accompanying notes 21-27 (discussing Katz decision and subsequent cases).
38. See infra text accompanying notes 71-74, 150-59 (discussing use of beeper, photography, and other surveillance and recording devices).
39. See infra notes 190-92 and accompanying text (discussing use of highly sophisticated surveillance equipment not generally available to public).
40. 274 U.S. 559 (1927).
41. Id. at 563.
42. 460 U.S. 730 (1983) (plurality opinion).
43. Id. at 740. The case involved the warrantless seizure from the motorist of an opaque party balloon knotted a half-inch from its top, and a subsequent, warrantless field test of the powder inside. The balloon was filled with heroin. Although all nine justices agreed that the officer had acted lawfully, there was considerable disagreement as to why the warrantless field test did not violate the Fourth Amendment warrant requirement. Justice Rehnquist wrote for a four-member plurality; Justice Powell wrote a concurring opinion in which Justice Blackmun joined; Justice Stevens, joined by Justices Brennan and Marshall, filed their own concurrence. Although both concurring opinions criticized various aspects of the plurality, neither objected to the plurality’s discussion of the officer’s use of the flashlight that enabled him to see the balloon.
44. Id.
constitute a search for the police to use artificial means to illuminate a dark-
ened area that would be exposed to public view in daylight. However, the Brown Court stated further that “the use of artificial means to illuminate a darkened area simply does not constitute a search, and thus triggers no Fourth Amendment protection.”45 Such language sweeps much more broadly than the facts in that case required. This language could, for example, give the police the authority to shine a flashlight through the shuttered windows of a dark-
ened house to enable them to see inside—all without a warrant, without probable cause, or without any legal justification whatsoever.

Was this “broader-than-necessary” language merely a slip of the pen, or will the Brown rationale be applied in locations arguably much more private than the passenger compartment of a car? In United States v. Dunn,46 a seven-Justice majority, despite protestations to the contrary, appears to have done precisely that. Law enforcement officers, investigating the suspected illicit manufacture of drugs,47 entered onto Dunn’s ranch and crossed several wire and wooden fences.48 The officers then arrived at a clearing where Dunn’s residence, two barns and other outbuildings were located. At the gateway of the larger barn, the officers observed that the front of the barn was enclosed by a wooden fence and had an open overhang.49 Entrance to the barn itself was blocked by locked, waist-high gates. Netting material was stretched from the ceiling of the barn to the top of the wooden gates. The netting was sufficiently opaque to prevent someone from seeing inside unless the observer stood immediately next to the netting.50 Shining a flashlight through the net-
ting, the officers peered into the barn and saw what they believed was an illicit drug laboratory. Their observations became the basis for a search warrant, pursuant to which they seized illicit drugs and related paraphernalia.51

45. Id.
47. In September of 1980, agents of the United States Drug Enforcement Administration (“DEA”) learned that a man named Carpenter had ordered substantial quantities of chemicals and equipment used in the manufacture of methamphetamine and phenylacetone. The agents obtained a court order authorizing the placement of electronic tracking devices in some of the equipment and chemical containers before Carpenter took possession. By lawfully monitoring one of the “beepers” and conducting aerial surveillance, the agents eventually traced the chemicals, equipment, and Carpenter’s pickup truck, which had transported some of these items, to a barn behind the ranch house of defendant Dunn’s 198-acre ranch. Id. at 1137.
48. Dunn’s ranch was completely surrounded by a perimeter fence. The property also contained several interior fences, constructed mainly of posts and multiple strands of barbed wire. The officers did not have a warrant authorizing them to trespass on Dunn’s property. Id.
49. The barn, together with the residence and other outbuildings, were “located in a clearing surrounded by woods, one-half mile from a road, down a chained, locked driveway. Neither the farmhouse nor its outbuildings [were] visible from the public road or from the fence that encircles the entire property.” Although the officers were unable to see through its solidly built back and sides, id. at 1142 (Brennan, J., dissenting), they detected the aroma of phenylacetic acid, a necessary ingredient in the manufacture of methamphetamine, coming from the barn. Id. at 1137-38.
50. Id.
51. Id.
The Supreme Court held that Dunn's Fourth Amendment rights were not violated. The main issue in the case was whether the clearing, and in particular the barn, was part of the "curtilage" of Dunn's home, and therefore protected by the Fourth Amendment against unreasonable searches; or whether these areas were the constitutional equivalent of "open fields," which enjoy no Fourth Amendment protection. Dividing seven to two, the Court concluded these areas were open fields that incurred no constitutional protections. Moreover, the majority held that it did not constitute a search for the officers to look inside the barn even assuming the barn itself was a business premises protected by the Fourth Amendment: "The Fourth Amendment has never been extended to require law enforcement officers to shield their eyes when passing by a home on public thoroughfares."

52. In Hester v. United States, 265 U.S. 57 (1924), Justice Holmes wrote the opinion for the Court holding that "the special protection accorded by the Fourth Amendment to the people in their 'persons, houses, papers, and effects,' is not extended to the open fields. The distinction between the latter and the house is as old as the common law." Id. at 59. Sixty years later in Oliver v. United States, 466 U.S. 170 (1984), Justice Powell's opinion for the Court reaffirmed the open fields doctrine. Thus, police officers do not violate the Fourth Amendment when they trespass onto fenced, posted private land to look for incriminating evidence.

As in Hester, the Oliver Court stressed that unlike open fields, the "curtilage" of a house is protected by the Fourth Amendment against unreasonable governmental intrusion. The Oliver Court observed:

[T]he curtilage is the area to which extends the intimate activity associated with the "sanctity of a man's home and the privacies of life," and therefore has been considered part of the home itself for Fourth Amendment purposes. Thus, courts have extended Fourth Amendment protection to the curtilage; and they have defined the curtilage, as did the common law, by reference to the factors that determine whether an individual reasonably may expect that an area immediately adjacent to the home will remain private.

Id. at 180 (citation omitted).

53. The Court enunciated a four-part test to determine whether an area is curtilage or open field, including consideration of

the proximity of the area claimed to be curtilage to the home, whether the area is included within an enclosure surrounding the home, the nature of the uses to which the area is put, and the steps taken by the resident to protect the area from observation by people passing by.

United States v. Dunn, 107 S. Ct. at 1139-40. Applying these factors, the Court concluded that all four argued against including the barn within the curtilage of Dunn's ranch house. Perhaps most surprising was the Court's conclusion that "[respondent did little to protect the barn area from observation by those standing in the open fields" because the various fences on Dunn's property were "typical ranch . . . fences, . . . designed and constructed to corral livestock, not to prevent persons from observing what lay inside the enclosed area." Id. at 1140.

54. Id. at 1141 (quoting California v. Ciraolo, 476 U.S. 207, 213 (1985)). In Ciraolo, the Court held that even though a fenced-in back yard was within the curtilage of a house, it did not constitute a search for police to conduct naked-eye aerial surveillance of the yard. See infra notes 91-136 (discussing Ciraolo decision in detail).

In Dunn, the Court, after quoting Ciraolo, commented: "[I]mportantly, we deemed it irrelevant [in Ciraolo] that the police observation at issue was directed specifically at the identification of marijuana plants growing on an area protected by the Fourth Amendment." United States v. Dunn, 107 S. Ct. at 1141.
The Court further held that the use of the flashlight did not constitute a search:

[T]he plurality opinion in *Texas v. Brown* notes that it is "beyond dispute" that the action of a police officer in shining his flashlight to illuminate the interior of a car, without probable cause to search the car, "trenched upon no right secured . . . by the Fourth Amendment." The holding in *United States v. Lee* is of similar import. Here, the officers' use of the beam of a flashlight, directed through the essentially open front of respondent's barn, did not transform their observations into an unreasonable search within the meaning of the Fourth Amendment.55

This passage is noteworthy for its brevity, its conclusory nature, and the lack of any acknowledgement that the interior of a Fourth Amendment-protected structure might merit different treatment, or at least raise different issues, than the interior of a car or the deck of a ship at sea, locations which are "knowingly exposed" to public view.56 The paragraph as a whole implies strongly that whenever the officer need not "shield his eyes when passing by a home on public thoroughfares," he need not shield his flashlight either. The use of a flashlight, in other words, may be constitutionally indistinguishable from naked-eye surveillance.

Interestingly enough, the *Dunn* majority did not quote the passage from *Brown* that can be read to hold that use of a flashlight is never a search.57 Rather, the *Dunn* Court commented pointedly that the officers shone their flashlight "through the essentially open front of respondent's barn." If the front of the barn was "essentially open" (a remarkable description given the barricades surrounding it),58 perhaps Dunn can be said to have "knowingly exposed" its interior to any police officer who happened to be trespassing illegally at its doorway. Thus, *Dunn* can be seen as factually quite similar to *Lee* and *Brown*. All three cases can be read as stating simply the obvious: it is not a search for police officers, positioned in a constitutionally unprotected location, to use a widely available, "low-technology" device like a flashlight to illuminate a location that is "knowingly exposed" to their scrutiny.

On the other hand, *Dunn* leaves uncertainty as to whether there is ever any constitutional protection against surveillance with a flashlight to protect a private location that is not knowingly exposed.59

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57. See supra text accompanying note 45 (quoting broad language used in *Brown*).
58. See supra notes 46-50 and accompanying text (discussing number of fences and other barricades surrounding barn).
59. See infra text accompanying notes 211-17 (discussing electronic surveillance used in homes and apartments).
B. Electronic Tracking Devices

In the 1983 decision of *United States v. Knotts*, and again in the 1984 decision of *United States v. Karo*, the Supreme Court considered the Fourth Amendment implications of electronic devices that enable investigators to monitor the location of the device and the object to which it has been attached.

Each case began, as do most such "beeper" cases, when law enforcement officials learned that certain individuals had ordered large quantities of a chemical that, in addition to many lawful uses, is also useful in the preparation of illicit drugs. With the seller's consent prior to the sale, the agents installed an electronic beeper in one of the containers, and then sold it to the suspects. In *Knotts*, the police then used the beeper to monitor the movement of the container from the place of purchase to the general vicinity of a cabin in a rural part of Wisconsin later the same day. In *Karo*, from time to time over a five month period, the agents used a variety of surveillance techniques, including the beeper, to track the container to three private houses, two storage lockers rented at separate storage facilities, the driveway of a fourth home, and, ultimately, a fifth house. In both *Knotts* and *Karo*, visual surveillance thereafter established probable cause to believe that the chemicals were indeed being used to prepare illicit drugs. In each case, the agents subsequently obtained a search warrant and seized incriminating evidence.

The *Knotts* and *Karo* decisions resolved many, but not all, of the issues that have arisen with regard to such devices. Of particular relevance here, the

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60. For an exhaustive discussion of these issues, see Fishman, supra note 12, at 277-395. The following discussion of tracking devices, infra text accompanying notes 62-91, is adopted from that earlier article.


63. Such an electronic tracking device is often called a "beeper," "beacon," or "transponder" [and consists of] a miniature, battery-powered radio transmitter that emits a recurrent signal at a set frequency. When monitored by directional finders, the beeper provides information as to the location and movement of the object to which it is attached. A beeper is incapable of transmitting conversation or recording sounds. For this reason, beepers do not fall within the definition of wiretapping devices.


64. In *Knotts*, Minnesota police were notified by a chemical company that an individual had ordered chemicals necessary to manufacture methamphetamine, including chloroform. In *Karo*, an individual notified Drug Enforcement Administration agents that Karo and others had ordered fifty gallons of ether from him, and that they would use the chemical in the preparation of cocaine (the cocaine had been dissolved into a liquid solution and absorbed into clothing, which had then been imported into the United States; the conspirators planned to use the ether to extract the cocaine from the clothing). Brief for the United States at 3-4, United States v. Karo, 468 U.S. 705 (1984) (No. 83-850); Brief for Respondents Harley and Horton at 3, id.

65. The Court held that it constitutes neither a search nor a seizure to install a beeper into a container of non-contraband chemicals with the consent of the current owner, and then sell the container to the target of the investigation, whom the authorities suspect will use the chemicals to
Knotts and Karo opinions implicitly divide the use of beepers to track or locate the container into three categories, which may be labelled "in-transit monitoring," "general vicinity monitoring" and "private location monitoring."

In Knotts, the Court held that monitoring a "beepered" object while it is "in transit" along public roads does not constitute a search. Knotts and Karo both hold that no search occurs if, having lost the beepered object, the agents then monitor the beeper to determine the "general vicinity" (but not the specific private location, if any) to which it has been taken. Karo holds that it is a search subject to Fourth Amendment standards, including the warrant requirement, when agents monitor the beeper to determine if the host object is inside a particular private location, such as a residence or rented storage locker.

Thus, whether monitoring is a search depends upon the nature of the information the beeper reveals. Monitoring that discloses only the movement of the beepered object in public, or only the general vicinity to which it has been taken, is not a search. Monitoring that discloses the object's presence in (or absence from) a particular private location is a search.

1. In-transit Monitoring: The Knotts Decision

Minnesota police discovered that Tristan Armstrong periodically purchased from a chemical company chemicals that could be used to manufacture illicit drugs. The officers further discovered that after Armstrong purchased these chemicals, he would deliver them to an accomplice, Darryl Petschen. With the consent of the seller company, the officers installed a beeper in a five-gallon

manufacture illicit drugs. This is not a seizure, the Court held, because it was "at most a technical trespass on the space occupied by the beeper," which did not involve any "meaningful interference with [respondent's] possessory interests in" the container. United States v. Karo, 468 U.S. at 712.

As to whether installation and subsequent transfer was a search, the Court observed that while the transfer of the container to the suspect "created a potential for an invasion of privacy, we have never held that potential, as opposed to actual, invasions of privacy constitute searches for purposes of the Fourth Amendment. ... It is the exploitation of technological advances that implicates the Fourth Amendment, not their mere existence." Id. (emphasis in original). The Court likened the transfer of an unmonitored beeper to a police officer carrying a parabolic microphone capable of picking up conversations in nearby homes. Possession of the microphone does not constitute a search; the search occurs only when the microphone is in fact turned on and used to overhear private conversations. Id.

67. Id. at 285; United States v. Karo, 468 U.S. at 713-14.
68. United States v. Karo, 468 U.S. at 714-15. Although the Karo decision resolved several important issues, it left other questions unanswered. In particular, the Court in Karo explicitly declined to discuss whether such a warrant would have to be supported by probable cause, the traditional factual showing required for a search warrant, or whether, because beeper surveillance is so much less intrusive than other searches, the lesser standard of "reasonable suspicion" would suffice. Id. at 718 n.5. Moreover, there are no clear guidelines indicating where the line is to be drawn, between the in-transit and general location monitoring that Knotts holds are not a search, and private location monitoring, which Karo holds is a search.
container of chloroform, one of the chemicals necessary to manufacture amphetamines. The next time Armstrong purchased chemicals, he was given the container in which the beeper had been installed.

Using both visual surveillance and the beeper, the officers followed Armstrong to Petschen's home, where the container was transferred to Petschen's automobile. The officers then followed the vehicle into Wisconsin. During the latter part of his journey, Petschen began driving evasively, and the agents lost both visual and beeper contact with his vehicle. Approximately one hour later, a helicopter equipped with a monitor detected the beeper signal, now stationary, in the vicinity of a cabin occupied by Knotts in a rural part of Wisconsin.

After three days of intermittent visual surveillance of the cabin, police officers obtained a search warrant. Searching the cabin, they found a fully operable, clandestine laboratory for drug production with equipment valued at more than $10,000, formulas for amphetamine and methamphetamine, and chemicals in sufficient quantity to produce fourteen pounds of pure amphetamine. Under a barrel outside the cabin, they also found the five-gallon container with the beeper. The only question before the Court in Knotts was whether it constituted a "search" for the police to use the beeper to follow Petschen and, after having lost their quarry, to determine that the beepered container of chloroform had come to rest in the vicinity of Knotts' cabin. The Court held that it did not.

The Court emphasized that "the application of the Fourth Amendment depends on whether the person invoking its protection can claim a "justifiable," a "reasonable," or a "legitimate expectation of privacy" that has been invaded by government action." 69 A unanimous Court concluded that Petschen failed to demonstrate such an invasion:

A person travelling in an automobile on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another. When Petschen travelled over the public streets he voluntarily conveyed to anyone who wanted to look the fact that he was travelling over particular roads in a particular direction, the fact of whatever stops he made, and the fact of his final destination when he exited from public roads onto private property. 70

The Court emphasized that "[v]isual surveillance from public places . . . adjoining Knotts' premises would have sufficed to reveal all of these facts to the police." 71 The fact that the police relied on the beeper in addition to visual surveillance to acquire this information "does not alter the situation," 72 the Court concluded, adding that "[n]othing in the Fourth Amendment prohibited

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69. United States v. Knotts, 460 U.S. at 280 (quoting Smith v. Maryland, 442 U.S. 735, 740 (1979)).
70. Id. at 281-82.
71. Id. at 282.
72. Id.
the police from augmenting the sensory faculties bestowed upon them at birth with such enhancement as science and technology afforded them in this case." The mere fact that "scientific devices such as the beeper enabled the police to be more effective in detecting crime," the Court stated, did not give rise to a constitutional violation. The Court concluded: "We have never equated police efficiency with unconstitutionality, and we decline to do so now."

2. Private Location Monitoring: The Karo Decision

Karo holds that private location monitoring of a beeper constitutes a search subject to the Fourth Amendment warrant requirement. Karo also reaffirmed and broadened the Knotts holding that general vicinity monitoring is not a search, but did not draw a clear line between it and private location monitoring (the latter of which is a search subject to the Fourth Amendment warrant requirement).

The Karo case began when an individual informed DEA agents that a group of cocaine traffickers asked him to supply them with several drums of ether. The traffickers needed the ether because they had arranged to have cocaine dissolved into clothing that was then imported into the United States; the ether would be used to precipitate the cocaine back out again. With this individual's permission, the agents hid a beeper in one of the drums. After the purchasers took possession, the agents used the beeper to track the drum to three private residences, then to two storage facilities. Significantly, they learned which locker the drums were stored in, not from the beeper, but by asking the facility manager. Finally, five months after the sale of the ether, the agents tracked the drums to the driveway of a fourth home and, ultimately, a fifth house, where incriminating evidence was finally seized.

The Court began its analysis by restating fundamental Fourth Amendment principles. First, "private 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." Second, "[s]earches and seizures inside a home without a warrant are presumptively unreasonable absent exigent circumstances."

These principles, the Court held, compelled the conclusion that private location monitoring constituted a sufficient intrusion into the residence to be considered a search. This would be the case, the Court emphasized, even if the agents had first tracked the beepered article to the residence by visual surveillance, for "the later monitoring not only verifies the officers' observations but

73. Id. at 282-83.
74. Id. at 284.
75. See infra notes 82-85 and accompanying text (discussing Knotts and Karo decisions and their relation to electronic monitoring issues).
77. Id. at 714-15.
also establishes that the article remains on the premises."

The Court stated that such monitoring is

less intrusive than a full-scale search, but it does reveal a critical fact about the interior of the premises that the Government is extremely interested in knowing and that it could not have otherwise obtained without a warrant. The case is thus not like Knotts, for there the beeper told the authorities nothing about the interior of Knotts' cabin. The information obtained in Knotts was "voluntarily conveyed to anyone who wanted to look." . . . [H]ere, as we have said, the monitoring indicated that the beeper was inside the house, a fact that could not have been visually verified. . . . Indiscriminate monitoring of property that has been withdrawn from public view would present far too serious a threat to privacy interests in the home to escape entirely some sort of Fourth Amendment oversight.

Although the specific factual context under discussion in Karo was a private residence, the Court stated explicitly that this holding applies as well to other locations in which privacy expectations are recognized as reasonable. The Court drew a careful distinction, however, between monitoring that reveals an object's presence inside such a location and therefore constitutes a search, and monitoring that only reveals that the object is in the general vicinity of such a location. Such monitoring, the Court made clear, is not a search.

3. General Vicinity Monitoring: Knotts and Karo

In Knotts, the Court held that the placing of a radio transmitter by the police inside a chloroform container in order to facilitate the surveillance of the container from its place of purchase to its final destination, in this case a cabin in rural Wisconsin, was not a search. The Court reasoned that a search had not occurred because the radio transmitter did not indicate whether the container was actually inside the cabin, and thus did not reveal information on the contents of the cabin. The Court used similar logic in Karo, when it

78. Id. at 715.
79. Id. at 715-16.
80. Id. at 720 n.6. The Court further held that, as a rule, private location monitoring of a beeper inside a private residence is lawful only if authorized by a warrant. Id. at 714-18. The Court noted but did not address whether a showing of reasonable suspicion rather than probable cause would suffice for the issuance of such a warrant. Id. at 718 n.5; see Fishman, supra note 12, at 372-90 (discussing problems and issues that arise in applying warrant requirement to beeper surveillance). The Court added that "if truly exigent circumstances exist no warrant is required under general Fourth Amendment principles." United States v. Karo, 468 U.S. at 718.
81. See infra notes 82-85 and accompanying text (discussing Knotts and Karo decisions and their relation to electronic monitoring issues).
82. United States v. Knotts, 460 U.S. at 281-83 (holding that monitoring of "beeper signals" of radio transmitter did not invade any reasonable expectation of privacy since beeper surveillance merely facilitated following of automobile on public streets and highways).
upheld the lawfulness of the police’s electronic monitoring of the movement of a can of ether. In *Karo*, the police were able to determine that a can of ether had been taken into a commercial storage facility, but were unable to identify the specific locker which contained the can. The Court stated that this monitoring of the beeper signal “revealed nothing about the contents of the locker” that the suspects had rented, and therefore “was not a search of that locker.” The Court noted that “[i]had the monitoring disclosed the presence of the container within a particular locker the result would be otherwise, for surely [the suspects] had a reasonable expectation of privacy in their own storage locker.”

The principle that emerges from these decisions is that monitoring that reveals the precise private location to which the beeper has been taken is a search; monitoring that reveals only the general vicinity of the beeper is not. The difficulty lies in drawing the line between the two. For example, had the agents in *Karo* been able to determine on which floor of the storage facility the ether can was located would the Court have found that a search had occurred? If not, what if the police had determined in which row of lockers on that floor the ether had been stored—would the Court then have found that a search had occurred?

Until the law is clarified, investigators may be forced to play a form of “Fourth Amendment roulette.” Each additional piece of information the police can derive from electronic devices—each narrowing of the investigative focus—puts them a step closer to what is factually required for a court order to permit private location monitoring. Yet, the agents will have no sure way of knowing at what point the use of the beeper crosses the line that separates non-search from search—a crossing that could prove fatal to the investigation. This state of affairs is unsettling in that it promotes neither police efficiency nor individual privacy.

**C. Tracking Devices and Artificial Illumination: A Comparison**

The Court held in *United States v. Dunn* that it is not a search for a police officer to use artificial illumination to see inside a location not within the curtilage of a house, so long as the officer does not physically intrude into an area protected by the Fourth Amendment against unreasonable searches. *Karo* held that it is a search to use a beeper and monitor to determine whether a specific object is inside a private location, even if the officer does not physically intrude into a location protected by the Fourth Amendment. These results are not difficult to reconcile.

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83. United States v. Karo, 468 U.S. at 720 (holding that mere installation of electronic beeper into can to aid police’s monitoring of can’s movement did not violate Fourth Amendment).

84. Id.

85. Id. at 720 n.6.

86. 107 S. Ct. 1134, 1139-41 (1987); see supra notes 46-59 and accompanying text (discussing details of *Dunn* and related cases).

87. United States v. Karo, 468 U.S. 705, 714-16 (1984); see supra notes 75-81 and accompanying text (discussing *Karo* and private location monitoring).
The divergent results in *Karo* and *Dunn* cannot be attributed to the location. With regard to the officers’ observation point, in *Karo* the police officers were not even on the suspect’s property when they utilized their equipment. In this respect, the agents’ conduct in *Karo* was less physically intrusive than that of the officers’ in *Dunn*. Regarding the location under surveillance, although the differences between the barn in *Dunn* and the cabin in *Karo* are self-evident, the Court in *Dunn* proceeded on the assumption that the barn was a business location protected by the Fourth Amendment. Thus, the location under surveillance is probably not the factor that distinguishes the two cases. Nor can the explanation be the nature of the information sought and obtained. In *Karo*, the agents confirmed that a chemical container was in a cabin, while in *Dunn*, the agents saw chemicals and lab equipment in a barn.

Logically, therefore, it must be the remaining factor that explains these differing results: the nature and quality of the surveillance equipment the officers used. *Dunn* involves the least sophisticated and most available of all surveillance devices, the flashlight, which simply allows an officer to see that which (but for the darkness) would be visible to the naked eye. The investigators in *Karo*, in contrast, were using equipment not available to the public at large. Their specialized equipment enabled the agents, in a sense, to “see through walls” into the privacy of a home to determine the presence or absence of a specific physical object. The Court quite understandably concluded that this enhancement was enough to constitute a search subject to the warrant requirement.

**D. Aerial Surveillance: California v. Ciraolo and Florida v. Riley**

Although the surveillance in *California v. Ciraolo* was conducted with the unaided naked eye, *Ciraolo* nevertheless merits discussion as an “enhanced visual surveillance” case because the officers obtained their vantage point in a scientifically enhanced manner—from an airplane.

Police officers received an anonymous telephone tip that marijuana was growing in respondent’s back yard. Surveillance from ground level was impossible, because the yard was surrounded by a six-foot outer fence and a ten-foot inner fence. Two officers trained in marijuana identification therefore secured a private plane and flew within navigable airspace over respondent’s house at an altitude of 1,000 feet. From this vantage point the officers identified marijuana plants, eight to ten feet in height, growing in a plot in respon-

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88. The mere presence of the container inside the cabin does not, by itself, constitute a search. An unmonitored beeper creates only a potential, not an actual, invasion of privacy. United States v. Karo, 468 U.S. at 712. The search occurs only when the agents monitor the beeper to determine whether the object is inside. See supra note 65 (discussing use of radio transmitters for surveillance).

89. United States v. Dunn, 107 S. Ct. at 1141.

90. See supra note 54 and accompanying text (discussing surveillance unaided by technology).

dent's yard. They included this information in an affidavit, obtained a search warrant, and seized seventy-three marijuana plants.92

Arrested and charged with cultivation of marijuana, Ciraolo pleaded guilty and then appealed. He complained that the aerial surveillance was an unlawful search, which had tainted the search warrant (probable cause for which was based primarily on the information derived from the surveillance) and the evidence seized pursuant to the warrant.93 Contending that he had done all that could reasonably be expected to demonstrate his expectation of privacy in his yard, Ciraolo argued that he had not "knowingly" exposed himself to surveillance from above.94

The California Court of Appeal agreed, and suppressed the evidence. That state court reasoned that because the fly-over was for the specific purpose of observing the enclosed portion of Ciraolo's yard, rather than a "routine patrol conducted for any other legitimate law enforcement or public safety objective," the flight constituted a search that, in the absence of a warrant, violated the Fourth Amendment.95

1. The Ciraolo Majority

The United States Supreme Court reversed the California court's decision. In an opinion joined by Justices White, Rehnquist, Stevens and O'Connor, Chief Justice Burger concluded that the aerial observation flight did not constitute a "search."96 The Court reached this result by what it insisted was a straightforward application of the Katz two-prong test: "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?"97

With regard to the first prong of Katz, the Court acknowledged that the ten-foot fence clearly manifested Ciraolo's subjective intent "to conceal the marijuana crop from at least street level views."98 The Court then turned to

92. Id. at 209.
93. Id. If a search warrant is issued on an investigator's affidavit that includes information that is "tainted," in that it was obtained in a way that violated the search-target's constitutional rights, a reviewing court in a subsequent challenge to the validity of the warrant should excise retroactively the tainted information. If what is left fails to establish probable cause, the warrant is considered invalid and evidence seized pursuant to the search must be suppressed. If probable cause still exists after the tainted information is eliminated, the warrant is considered valid and the evidence is admissible. United States v. Karo, 468 U.S. at 719-21.
96. California v. Ciraolo, 476 U.S. at 211.
97. Id.
98. Id. The Court noted California's concession that Ciraolo had such a subjective expectation, and stated, "we need not address that issue." Id. Nevertheless, the Court commented:

Yet a 10-foot fence might not shield these plants from the eyes of a citizen or a policeman perched on the top of a truck or a 2-level bus. Whether respondent therefore manifested a subjective expectation of privacy from all observations of his back-
the second inquiry under *Katz* of whether that expectation is reasonable. "In pursuing this inquiry," the majority opinion admonished, "we must keep in mind that '[t]he test of legitimacy is not whether the individual chooses to conceal allegedly "private" activity,' but instead 'whether the government's intrusion infringes upon the personal and societal values protected by the Fourth Amendment.'"

The Court acknowledged that Ciraolo's back yard was within the curtilage of his home. The Fourth Amendment therefore protected Ciraolo's right to privacy against any police search of his yard. "[T]he question remains," the Court continued, "whether naked-eye observation of the curtilage by police from an aircraft lawfully operating at an altitude of 1,000 feet violates an expectation of privacy that is reasonable." The Court concluded that the flight did not violate such an expectation because Ciraolo had no such expectation in the first place:

The 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. Nor does the mere fact that an individual has taken measures to restrict some views of his activities preclude an officer's observations from a public vantage point where he has a right to be and which renders the activities clearly visible. "What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection."

The Court stressed that the flight stayed within publicly navigable airspace, the surveillance was conducted in a "physically nonintrusive manner," and that from an altitude of 1,000 feet the officers were able to detect the

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*yard, or whether instead he manifested merely a hope that no one would observe his unlawful gardening pursuits, is not entirely clear in these circumstances.*

*Id.* at 211-12 (emphasis in original).

99. *Id.* at 212 (quoting *Oliver v. United States*, 466 U.S. 170, 181-83 (1984)).

100. *Id.* The Court commented that

[73x177]the protection afforded the curtilage is essentially a protection of families and personal privacy in an area intimately linked to the home, both physically and psychologically, where privacy expectations are most heightened. [Ciraolo's yard] was immediately adjacent to a suburban home, surrounded by high double fences. This close nexus to the home would appear to encompass this small area within the curtilage.

*Id.* at 212-13. It is uncertain whether a typical back yard that is *not* surrounded by high double fences would qualify as curtilage. *See supra* notes 52-53 and accompanying text (discussing concept of curtilage).


102. *Id.*

103. *Id.* (quoting *Katz v. United States*, 389 U.S. 347, 351 (1967)).

104. *Id.* (citing 49 U.S.C. § 1304 (1982) that directs that citizens of United States have public right of "freedom of transit through the navigable airspace of the United States").
marijuana with the naked eye, unaided by any technological enhancement.105

"Any member of the public flying in this airspace who glanced down," the
Court emphasized, "could have seen everything that the officers observed."106

In deciding whether the aerial surveillance constituted a search, it was "ir-
relevant" that the sole purpose of the flight was to enable officers trained to
recognize marijuana to view Ciraolo's back yard.107 There is no constitutional
difference, the Court asserted, between "ground-level" police surveillance on a
particular place, and "aerial" police surveillance on that same location.108 In-
sisting that the case was one of "simple visual observations from a public
place,"109 and that the police overflight was no different for constitutional
purposes than "a power company repair mechanic on a pole overlooking the
yard,"110 the Court concluded that "respondent's expectation that his garden
was protected from such observation is unreasonable and is not an expectation
that society is prepared to honor."111

Surveillance involving a use of technology that "discloses to the senses
those intimate associations, objects or activities otherwise imperceptible to po-
lice or fellow citizens" might constitute a search, the Court noted.112 How-

105. Id. The Court noted that although the officers photographed Ciraolo's house and yard,
neither the respondent nor the state raised any distinct issue as to the photograph. Moreover, the
photograph played no real role in the investigation. Indeed, one of the officers testified that the
marijuana plants were not readily discernable in the photograph. Hence, the photograph did not
present any issues in Ciraolo. Id. at 212 n.1. In the companion case of Dow Chemical Co. v.
United States, 476 U.S. 227 (1986), however, aerial photography was at the very center of the
Fourth Amendment issues. See infra notes 194-210 and accompanying text (discussing expectations
of privacy).


107. Id. at 213.

108. Id. at 214 n.2. Indeed, the Court praised the officers for their ingenuity, stating that
"[s]uch observation is precisely what a judicial officer needs to provide a basis for a warrant." Id. at 214. The Court therefore rejected explicitly the California Court of Appeal's attempt to
distinguish between a "routine patrol flight," which would not constitute a search of Ciraolo's
yard, and the actual flight, which "focused" on his property: "[W]e find difficulty understanding
exactly how respondent's expectations of privacy from aerial observation might differ when two
airplanes pass overhead at identical altitudes, simply for different purposes." Id. at 214 n.2.

109. Id. at 214.

110. Id. There is in fact a substantial constitutional difference. The police officer is a state
agent, the legality of whose conduct is therefore measured against Fourth Amendment standards.
The power company mechanic (assuming the company is privately owned) is not a state agent. No
Fourth Amendment basis exists, therefore, to suppress evidence based on his or her observations,
even if they violated the homeowner's constitutional rights. See Burdeau v. McDowell, 256 U.S.
465 (1921) (holding constitutional government's use of incriminating evidence turned over to gov-
ernment by private parties who procured the evidence through wrongful search without participa-
tion or knowledge of government).

Earlier in the opinion, Chief Justice Burger, writing for the Court, had commented that Cira-
olo's ten-foot fence "might not shield [the marijuana plants] from the eyes of a citizen or a
policeman perched on the top of a truck or a 2-level bus." California v. Ciraolo, 476 U.S. at 211.

111. California v. Ciraolo, 476 U.S. at 214.

112. Id. at 215 n.3 (citation omitted). The Court further noted that in Dow Chemical Co. v.
United States, 476 U.S. 227 (1986), decided the same day, it held that "the use of an aerial
ever, the Court insisted that no such use of technology had occurred: "The Fourth Amendment simply does not require the police travelling in the public airways [at 1,000 feet] to obtain a warrant in order to observe what is visible to the naked eye."  

2. The Ciraolo Dissent

The dissent, written by Justice Powell and joined by Justices Brennan, Marshall and Stevens, made three basic points. First, given the yard's proximity to the house, the domestic activities for which the yard was sometimes used and the efforts to shield the yard from the view of passers-by, Ciraolo's back yard was part of the residential curtilage. Thus, Justice Powell wrote, this case involves "surveillance of a home," the "place in which a subjective expectation of privacy virtually always will be legitimate" and therefore protected by the Fourth Amendment.

Second, the police used "an airplane—a product of modern technology—to intrude visually into respondent's yard." By ignoring the significance of this fact, Justice Powell wrote, the majority "departs significantly from the standard developed in Katz for deciding when a Fourth Amendment violation has occurred." That the officer's flight was in "publicly navigable airspace" and did not physically intrude into Ciraolo's curtilage is "constitutionally irrelevant," Powell argued. "Reliance on the manner of surveillance is directly contrary to the standard of Katz, which identifies a constitutionally protected privacy right by focusing on the interests of the individual and of a free soci-

mapping camera to photograph an industrial manufacturing complex from navigable airspace similarly does not require a warrant under the Fourth Amendment." California v. Ciraolo, 476 U.S. at 215 n.3; see infra notes 139-210 and accompanying text (discussing Dow and Ciraolo decisions and their implications regarding determination of legitimate expectations of privacy).


114. Id. at 220-21 (Powell, J., dissenting).

115. Id. at 220 (Powell, J., dissenting).

116. Id. (citations omitted).

117. Id.

118. Id. at 216 (Powell, J., dissenting). Justice Powell described the Court's post-Katz decisions as repeated refusals "to freeze " into constitutional law those enforcement practices that existed at the time of the Fourth Amendment's passage." Rather, we have construed the Amendment " in light of contemporary norms and conditions," in order to prevent 'any stealthy encroachments' on our citizens' right to be free of arbitrary official intrusion." Id. at 217-18 (citations omitted). Justice Powell sought in this passage to demonstrate how firmly these principles are established by quoting liberally from prior opinions. The quoted portions beginning "into constitutional law . . ." and "in light of . . ." first appeared in Payton v. New York, 445 U.S. 573, 591 n.33 (1980), and were thereafter quoted by the Court in Steagald v. United States, 451 U.S. 204, 217 n.10 (1981). The "stealthy encroachments" phrase was coined in Boyd v. United States, 116 U.S. 616, 635 (1886). Payton holds that police must have an arrest warrant before they may enter a suspect's home to arrest him. Steagald holds that before police may enter a third person's home to arrest a suspect, they must have a search warrant authorizing them to search that home for the suspect. Boyd held that a subpoena for a person's "private papers" violated interests protected by the fourth and fifth amendments. Boyd was virtually overruled in the subsequent decision of Fisher v. United States, 425 U.S. 391 (1976).
The foremost of such interests, of course, is the individual and societal interest in preserving the right to privacy in the home from the "stealthy encroachments" of technology.120

Third, the majority's conclusion, that Ciraolo knowingly exposed his backyard to view from public airspace, willfully ignores the "qualitative difference" between purposeful police surveillance and the casual glance of a private air passenger:

Travelers on commercial flights, as well as private planes used for business or personal reasons, normally obtain at most a fleeting, anonymous, and nondiscriminating glimpse of the landscape and buildings over which they pass. The risk that a passenger on such a plane might observe private activities, and might connect those activities with particular people, is simply too trivial to protect against. It is no accident that, as a matter of common experience, many people build fences around their residential areas, but few build roofs over their backyards. Therefore, contrary to the Court's suggestion, ... people do not "knowingly expos[e]" their residential yards "to the public" merely by failing to build barriers that prevent aerial surveillance.122

Noting that the Court's decision "has serious implications for outdoor family activities conducted in the curtilage of a home,"123 and decrying the "indiscriminate nature of aerial surveillance,"124 Justice Powell concluded by accusing the majority of ignoring "the longstanding presumption that warrantless intrusions into the home are unreasonable."125

3. Evaluation

The Ciraolo majority's attempt to justify its conclusions in Katzian terms126 weakens the entire opinion, because the fundamental differences between interception of communications (at issue in Katz) and the aerial surveillance at issue in Ciraolo renders Katz an imperfect analogy at best. Moreover, calling

119. California v. Ciraolo, 476 U.S. at 223 (Powell, J., dissenting) (emphasis in original). Justice Powell asserted that "[s]ince [the officer] could not see into this private family area from the street, the Court certainly would agree that he would have conducted an unreasonable search had he climbed over the fence, or used a ladder to peer into the yard without first securing a warrant." Id. at 222. The majority, however, probably would not agree that using a ladder would be a search. Chief Justice Burger's majority opinion specifically likened the aerial surveillance (which it found lawful) to "a policeman perched on the top of a truck or a 2-level bus." Id. at 211.
120. Id. at 217, 220 (Powell, J., dissenting) (citations omitted).
121. Id. at 224.
122. Id. at 223-24 (footnote and citation omitted).
123. Id. at 225 n.10.
124. Id. at 225.
125. Id. at 226.
126. Id. at 213 (quoting Katz v. United States, 389 U.S. 347, 351 (1967)).
Ciraolo's efforts to shield his back yard from uninvited eyes a "knowing exposure," as the dissent points out, simply ignores reality. Indeed, it is an example of terminological inexactitude of which even Humpty Dumpty would be proud.

The dissent also overstates its points somewhat. It is true, for example, that the Court has (and should) treat subjective privacy expectations in the home with particular deference. Likewise, since Katz "the manner of surveillance" often is no longer the controlling consideration in determining whether the surveillance constitutes a search. Nevertheless, neither of these principles are as absolute as Justice Powell implies.

Moreover, although it would have been more forthright to acknowledge the factual differences between casual civilian (or police) observation and purposeful police surveillance, the majority was wise in rejecting the constitutional distinction between the two urged by the dissent. The Court has long insisted that as long as an officer's conduct is objectively reasonable, it is constitutional regardless of whatever ulterior motive he or she may have had. To deviate from this principle might have opened up broad new areas of uncertainty in the law.

127. See supra text accompanying notes 121-22 (discussing majority opinion's disregard of differences between police surveillance and casual glance by private air passenger).


129. That character's pleasure in prevarication is apparently not limited to the realm of fiction:

"But 'glory' doesn't mean 'a nice knockdown argument,'" Alice objected. "When I use a word," Humpty Dumpty said, in a rather scornful tone, "it means just what I choose it to mean—neither more nor less." "The question is," said Alice, "whether you can make words mean so many different things." "The question is," said Humpty Dumpty, "which is to be master—that's all."

C.L. DODGSON (LEWIS CARROLL), THROUGH THE LOOKING GLASS ch. 6 (1947).

130. See supra text accompanying notes 115-16 (legitimate right to privacy will almost always be found in subjective privacy expectations in the home).

131. See supra text accompanying notes 118-19 (because constitutionally protected privacy right is determined by individual interests in free society, manner of surveillance is irrelevant to analysis).

132. An example will illustrate the point. If a police officer hid a camera in a suspect's home to watch the suspect's conduct at a particular day and time, this clearly would be a search. Suppose instead an undercover officer or informer won the suspect's confidence and secured an invitation into the home, and thus learned what the suspect said and did during the critical period. The suspect subjectively believed that the "privacy" of his home protected him from government surveillance. It would be entirely rational for the law to conclude that this expectation is a reasonable one protected by the Fourth Amendment. The Court, however, has consistently ruled otherwise. An unbroken line of decisions holds that whenever we confide in someone, for Fourth Amendment purposes we must "assume the risk" that our confidant is then or later will betray us. See supra notes 31-35 and accompanying text (individuals have no Fourth Amendment complaint if their confidant is a police informer who reports what he has seen or heard). Thus, the manner whereby a suspect's at-home activities are discovered still may determine whether the surveillance is a search or not.

The holding in *Ciraolo* is simple enough: henceforth an homeowner must assume the risk, for Fourth Amendment purposes, that his fenced-in yard will be subjected to naked-eye surveillance from public airspace, at least when that surveillance is conducted from an altitude of 1,000 feet. This result is entirely defensible on the grounds that the surveillance neither did nor could have intruded upon “the intimate activity associated with the ‘sanctity of a man’s home and the privacies of life,’” and therefore intruded upon no reasonable expectation of privacy. Thus, the result is best explained and justified by reference to the nature of the information the surveillance did, and did not, reveal. The *Ciraolo* majority’s failure to give proper emphasis to this factor is unfortunate.

4. *Florida v. Riley*

In *Florida v. Riley*, a four-Justice plurality applied the reasoning of *Ciraolo* to helicopter surveillance conducted from a height of 400 feet, and concluded that no search had occurred. As in *Ciraolo*, the *Riley* Court mentioned, but failed to adequately discuss, the nature of the information sought and discovered.

E. Image Magnification: The Dow Chemical Case

The case of *Dow Chemical Co. v. United States* was argued and decided the same day as *Ciraolo*. The *Dow* case arose when the Environmental Protection Administration (“EPA”) sought permission to conduct an on-site inspection of a 2,000-acre chemical manufacturing facility operated by Dow in Midland, Michigan. Dow refused permission, so the EPA employed a commercial aerial photographer to photograph the facility. Claiming that the photographs might reveal valuable trade secrets that it had gone to considerable lengths to protect (particularly with regard to several open-air plants), Dow brought suit in federal district court, alleging that the EPA’s action constituted a search that violated the Fourth Amendment. The district court agreed, and granted an injunction.

134. See supra notes 100-01 and accompanying text (back yard may be curtilage to home where, as is true in *Ciraolo*, the yard is next to home and surrounded by high, double fence).

135. Justice Powell pointed out that aerial surveillance at an altitude of 1,000 feet revealed a swimming pool and sun deck. *California v. Ciraolo*, 476 U.S. at 216 (Powell, J., dissenting). But it is difficult to imagine that naked-eye surveillance from such a distance would permit the officers to observe any “intimate activity.”

136. See infra notes 201-217 and accompanying text (surveillance of intimate activity within home through use of commonly available and high quality equipment might not constitute search).


138. See infra text accompanying notes 226-33 (discussing *Riley* decision in detail).


140. The cases were argued on December 10, 1985, and decided on May 19, 1986.

141. Dow Chem. Co. v. United States, 536 F. Supp. 1355 (E.D. Mich. 1982). Dow also argued that the photography constituted a “taking” of property without due process in violation of the fifth amendment, and that the EPA lacked statutory authority to conduct the surveillance. The district court dismissed the fifth amendment claim without prejudice, and concluded that the EPA had exceeded its statutory authority. The Supreme Court, however, unanimously upheld the EPA’s conduct under the statutory issue. Dow Chem. Co. v. United States, 476 U.S. at 234.
Sixth Circuit Court of Appeals reversed, and Dow appealed. Dow, like Ciraolo and Riley, poses questions concerning the applicability of the Fourth Amendment to aerial surveillance. The cases differ, however, in two significant respects. First, unlike the naked-eye surveillance in Ciraolo and Riley, the Dow surveillance was conducted with an aerial mapping camera that recorded on film far more than an observer in the plane could have seen with the naked eye. Thus, the surveillance in Dow was far more revealing than that in Ciraolo and Riley. Second, while Ciraolo and Riley involved surveillance of a curtilage of a private home, Dow involved surveillance of a huge multi-building industrial complex.

To support its claim that it had a Fourth Amendment right to privacy from aerial photography, Dow argued that the open spaces within the complex constituted an “industrial curtilage” protected by the Fourth Amendment, particularly since it had “done everything commercially feasible to protect the confidential business information and property located within the borders of the facility.” The Court in Dow focused most of its Fourth Amendment attention on the question of whether the Dow complex should be likened to residential curtilage or an open field. A five-to-four majority opinion written by Chief Justice Burger concluded that “for purposes of aerial surveillance,” the latter analogy was more apt and rejected Dow’s claim.

142. 749 F.2d 307 (6th Cir. 1984).
143. The 2,000-acre complex contains numerous chemical processing plants, several of which are “open-air” plants, with reactor equipment, loading and storage facilities, motors, and other equipment located in the open area between buildings. Dow claimed that the technology used in these plants are trade secrets protected by law, and that aerial photographs of the design and configuration of its open-air facilities could reveal details of its secret manufacturing processes. Dow Chem. Co. v. United States, 476 U.S. at 230.
144. Federal and state trade secret laws protect it from unauthorized disclosure of the information in question, the company pointed out. By enacting such legislation, Dow reasoned, society had recognized as “reasonable” the company’s expectation of privacy from surveillance that might disclose the information in question. Id. at 232.
145. Id. at 241 (Powell, J., dissenting). Entrance to the plant is strictly regulated. An eight-foot high chain link fence completely surrounds the facility. The fence is patrolled by security personnel, monitored by closed-circuit televisits, motion detectors and other alarm systems. The open-air plants are placed within the internal portion of the complex, to shield them from public view from outside the perimeter fence. Use of photographic equipment within the complex by anyone other than authorized Dow personnel is prohibited, and no photographs of the facility may be taken or released without prior management review and approval. Id. at 241-42 (Powell, J., dissenting). The District Court found that all told, Dow had spent at least $3.25 million on various security measures in each of the ten years preceding the litigation. Dow Chem. Co. v. United States, 536 F. Supp. at 1365.
146. Justices White, Rehnquist, Stevens and O’Connor joined Chief Justice Burger's majority opinion. Justice Powell, joined by Justices Brennan, Marshall and Blackmun, dissented from the majority's Fourth Amendment analysis.
147. The majority acknowledged that commercial property, like residential property, is protected by the Fourth Amendment from unreasonable searches and seizures. Dow Chem. Co. v. United States, 476 U.S. at 235. Still, the Chief Justice insisted, commercial property enjoys less protection than an individual's home, because the expectation of privacy in such property “differs significantly from the sanctity afforded an individual’s home” or residential curtilage. Id. at 237-38.
The Dow case involved more than simple aerial surveillance, however. A commercial aerial photographer hired by the EPA utilized an aerial mapping camera to photograph Dow's facility at altitudes ranging from 1,200 feet to 12,000 feet. The camera cost more than $22,000, was mounted to the floor inside the aircraft, and produced photographs that permitted depth perception and enlargement to a dramatic degree without significant loss of detail or resolution. Thus, "the camera saw a great deal more than the human eye could ever see" from the same vantage point. Surveillance this intrusive, the district court had held, must be considered a search. Accordingly, the Supreme Court devoted considerable attention to the surveillance technology employed by the EPA. In the process, it provided its most explicit discussion to date of the application of the Fourth Amendment to surveillance technology.

1. The Sophistication of Surveillance

"In common with much else," the Dow majority observed, "the technology of photography has changed in this century. These developments have enhanced industrial processes, and indeed all areas of life; they have also enhanced law enforcement techniques." Early in the opinion, the Court described the equipment used to photograph the Dow facility as "a standard floor-mounted, precision aerial mapping camera." The Court stated that "[a]ny person with an airplane and an aerial camera could readily duplicate [the photographs]"—a comment that has received well-deserved ridicule. Near the end of its explanation of why the Dow complex was (for aerial surveillance purposes) an open field rather than a curtilage, the majority opinion explained why the capabilities of the equipment did not, under the facts, raise independent Fourth Amendment issues:

EPA was not employing some unique sensory device that, for example, could penetrate the walls of buildings and record conversations

(quotting Donovan v. Dewey, 452 U.S. 594, 598-99 (1981)). The Court acknowledged that "[a]ny actual physical entry by EPA into any enclosed area would raise significantly different questions." Id. at 237. Justice Powell, dissenting, accused the majority of grossly misrepresenting the Court's prior decisions applying the Fourth Amendment to commercial premises. Id. at 246 (Powell, J., dissenting). Similarly, the dissent condemned the majority's emphasis on the lack of physical entry.

148. Id. at 242 n.4 (Powell, J., dissenting).
149. Id. at 243 (quoting Dow Chem. Co. v. United States, 536 F. Supp. at 1367).
152. Id. at 229; see supra text accompanying notes 148-49 (describing capabilities of camera in question).
154. For example, Professor Yale Kamisar has quipped that "any 'Joe Sixpack' with an airplane and a $22,000 camera—purchased perhaps at the local K-Mart?—could readily duplicate these photos." 55 U.S.L.W. 2235 (Oct. 28, 1986). Had the majority simply said "anyone with the necessary funds could have hired an aerial photographer," it would have made its point and avoided the ridicule.
in Dow's plants, offices or laboratories, but rather a conventional, albeit precise, commercial camera commonly used in map-making. . . . It may well be, as the Government concedes, that surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally prescribed absent a warrant. But the photographs here are not so revealing of intimate details as to raise constitutional concerns. Although they undoubtedly give EPA more detailed information than naked-eye views, they remain limited to an outline of the facility's buildings and equipment. The mere fact that human vision is enhanced somewhat, at least to the degree here, does not give rise to constitutional problems. An electronic device to penetrate walls or windows so as to hear and record confidential discussions of chemical formulae or other trade secrets would raise very different and far more serious questions . . . .

The Dow dissent criticized this passage on several grounds. First, Justice Powell protested that "[t]hese observations shed no light on the antecedent question whether Dow had a reasonable expectation of privacy." He argued that since Katz, Fourth Amendment rights have been measured "by reference to the privacy interests that a free society recognizes as reasonable, not by reference to the method of surveillance used in the particular case."156 Second, the dissent expressed grave concerns about the implications of the majority's approach to scientifically enhanced surveillance: "If the Court's observations were to become the basis of a new Fourth Amendment standard that would replace the rule in Katz, privacy rights would be seriously at risk as technological advances become generally disseminated and available in our society."157

Finally, Justice Powell argued that the majority's distinctions in the sophistication of technology still did not justify the majority's resolution of the case: "Satellite photography hardly could have been more informative about Dow's technology" than the aerial photography proved to be.158 Seeking to dramatize the intrusive nature of the photography, the dissent emphasized that "the photographs revealed details 'as small as 1/2 inch in diameter.'"159 In a footnote, the majority responded that

155. Dow Chem. Co. v. United States, 476 U.S. at 238-39. The Court concluded the paragraph by noting that "other protections such as trade secret laws" protect businesses against private surveillance by competitors. Id. at 239.

156. Id. at 251 (Powell, J., dissenting). Although as a general proposition this is so, its scope is limited by the "knowing exposure" and "assumption of risk" concepts. See supra notes 25-35 and accompanying text (discussing two-prong Katz test). Indeed, the majority justified the results in Ciraolo on the theory that the appellant had "knowingly exposed" his property to aerial surveillance. See supra notes 96-111 and accompanying text (discussing Ciraolo opinion concerning expectations of privacy).


158. Id. at 251 n.13.

[t]he . . . dissent emphasizes . . . that under magnification power lines as small as 1/2-inch can be observed. But a glance at the photographs in issue shows that those lines are observable only because of their stark contrast with the snow-white background. No objects as small as 1/2-inch diameter such as a class ring, for example, are recognizable, nor are there any identifiable human faces or secret documents captured in such a fashion as to implicate more serious privacy concerns. Fourth Amendment cases must be decided on the facts of each case, not by extravagant generalizations. "[W]e have never held that potential, as opposed to actual, invasions of privacy constitute searches for purposes of the Fourth Amendment." On these facts, nothing in these photographs suggests that any reasonable expectations of privacy have been infringed.160

2. Measures and Countermeasures

To support its claim that the surveillance had infringed a constitutionally protected expectation of privacy, Dow argued that it had taken elaborate precautions to protect itself against aerial surveillance that might reveal the company's trade secrets.161 As a matter of standard company practice, employees are instructed to note the identification number of any "suspicious" overflights of the facility. When such flights occur, the company locates the pilot to determine if he had photographed the facility and, if so, requests the photographer to turn over the film. If the pilot complies, Dow develops the film and reviews the photographs. If they reveal private business information, Dow retains the photographs and negatives. If the pilot refuses to cooperate, Dow commences litigation to protect its trade secrets.162

Thus, Dow argued, it did all that it could reasonably be expected to do to protect its facility from aerial photography. The only other alternative would be to place a roof over its open-air facilities. This, the company insisted, would be unreasonable for two reasons. First, it would be prohibitively expensive: to roof just one such plant in 1978 would have cost approximately $15 million. Second, it would greatly increase the danger to employees if explosive or toxic chemicals were released accidentally.163

The Court, however, dismissed Dow's anti-aerial surveillance procedures as being beneath serious discussion, stating that Dow "‘did not take any precau-

160. Id. at 239 n.5 (quoting United States v. Karo, 468 U.S. 705, 712 (1984)).
161. To merit Fourth Amendment protection, a person (or corporation) must show that police surveillance intruded upon an actual (subjective) expectation of privacy, and that society recognizes that expectation as reasonable. Katz v. United States, 389 U.S. 347, 361 (1967) (Harlan, J., concurring); see supra notes 24-27 and accompanying text (discussing Justice Harlan's formula). Dow hoped to persuade the Court that its countermeasures against aerial surveillance evinced an actual expectation of privacy in satisfaction of the first prong of Katz.
163. Id. at 240 n.1 (Powell, J., dissenting).
tions against aerial intrusions.' 164 Noting that the plant is near an airport and within frequently used landing and takeoff patterns, 165 Chief Justice Burger concluded that "[s]imply keeping track of the identification numbers of any planes flying overhead, with a later follow-up to see if photographs were taken, does not constitute a 'procedur[e] designed to protect the facility from aerial photography.' " 166 The majority did not respond directly to Dow's claim that no more protective countermeasures were feasible. The holding in Dow nonetheless contains an unequivocal rejection of this claim. The cost of privacy from aerial surveillance of this sort, the Court indicated silently but clearly, is a roof. If Dow was unwilling or unable to pay the price, it would simply have to forgo the privacy.

F. Evaluation

It is axiomatic that a physical entry onto a private premises absent consent is a search that usually must be authorized by a search warrant. This is so whether the officers' purpose is to look for evidence, 167 to look for an individual, 168 or to install an electronic surveillance device. 169 In the 1980's, the Supreme Court has on several occasions been called upon to determine when the Fourth Amendment should apply to technologically enhanced visual surveillance (or a functional equivalent) conducted without a physical entry. Ciraolo holds that it is not a search for police officers to conduct naked-eye surveillance of a private, Fourth Amendment-protected place, so long as the officers have not physically entered the private location and their observation point is somewhere the officers have a right to be. 170 The Brown, 171 Dunn, 172 Knotts, 173

164. Id. at 237 n.4 (quoting with approval Dow Chem. Co. v. United States, 749 F.2d 307, 312 (6th Cir. 1984) (emphasis added)). Footnote 4 of the Dow majority opinion also quotes approvingly the Sixth Circuit's observation that "'[i]f elaborate and expensive measures for ground security show that Dow has an actual expectation of privacy in ground security, . . . then taking no measure for aerial security should say something about its actual privacy expectation in being free from aerial observation.' " Id. (quoting Dow Chem. Co. v. United States, 749 F.2d at 312 (emphasis in original)).
165. Dow did not deliberately choose to locate its facility near an airport—it had been manufacturing chemicals at that site since the 1890's. Id. at 240 (Powell, J., dissenting). The first successful airplane flight occurred in 1903.
166. Id. at 237 n.4 (citations omitted).
170. See supra notes 107-11 and accompanying text (police have right of aerial surveillance).
172. See supra notes 46-59 and accompanying text (discussing decision in United States v. Dunn, 107 S. Ct. 1134 (1984)).
Karo and Dow decisions hold that it likewise is not a search for law enforcement officers to use artificial means, ranging in sophistication from a simple flashlight to state-of-the-art aerial photography, to observe locations or conduct that are public in nature, or "knowingly exposed to the public," or are at least more akin to an "industrial open field" than to the curtilage of a private home. Karo holds that it does, however, constitute a search to employ an electronic device to "see" whether a miniature transmitter is inside a private premises or location.

Once we move beyond these holdings, certainty as to the interplay between enhanced visual surveillance and the Fourth Amendment is hard to come by. Any attempt at analysis must, however, begin with the Court's most detailed discussion of the subject to date: the "high technology" paragraphs and footnote in Dow.

1. The Comparison with Eavesdropping

The Dow Court began by pointing out that the "EPA was not employing some unique device that, for example, could penetrate the walls of buildings and record conversations" that occur inside, and ended its "hi-tech" discussion with the observation that use of such a device "would raise very different and far more serious questions." That the Court begins and ends its discussion of visual surveillance technology in this fashion is noteworthy for two reasons.

First, while analogies to electronic eavesdropping are natural enough, the inherent differences between eavesdropping and enhanced visual surveillance reduce such analogies to only marginal usefulness. Several differences exist. First, visual and aural surveillance seek to discover significantly different things. The former focuses on appearance, location and movement, while the latter focuses on speech. Second, technology aside, the former can be conducted at far greater distances than the latter; light travels farther than sound. Third, again putting technology aside, it is sometimes easier to take measures against visual than aural surveillance. Even the thinnest wall prevents others

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174. See supra notes 75-85 and accompanying text (discussing decision in United States v. Karo, 468 U.S. 705 (1984)).
175. See supra text accompanying note 155 (discussing decision in Dow).
176. Thus, in Knotts and Karo the Court held that movement on the public highways are not protected by the Fourth Amendment from electronic beeper surveillance. See supra notes 69-74, 82-85 and accompanying text (discussing constitutionality of police use of beepers).
177. Such as, in Brown, those portions of the passenger compartment of an automobile that are visible to a passer-by.
178. See supra notes 144-47 and accompanying text (distinguishing between industrial and residential curtilage).
179. See supra text accompanying notes 75-81 (discussing Karo holding and private location monitoring).
180. See supra notes 151-56, 160 and accompanying text (discussing sophistication of available technology).
182. Id. at 239.
from seeing what we do. Yet, as anyone who as spent time in an inexpensive motel (to cite one example) can attest, walls do not necessarily prevent others from hearing what we say or do.

Perhaps the biggest difference between visual surveillance and aural surveillance, however, is that the latter simply seems to offend our deeply held values more than the former. It boils down to an assessment of which expectations of privacy society is and is not willing to accept as reasonable. There is a built-in acceptance that where we go and what we do, except behind closed doors, simply is not "private." It is not as private, at any rate, as what we say to others—even if the conversation occurs in public, so long as there are no uninvited listeners within earshot.

The Court’s comparison of image magnification to electronic eavesdropping is noteworthy for a second reason. The technology discussion ends with the comment that use of a device that "could penetrate the walls of buildings and record conversations" that occur inside "would raise very different and more serious questions." In fact, however, any "questions" raised by such surveillance were answered conclusively in the 1967 decision of Katz v. United States. Katz holds that when a person is in a location where he enjoys a reasonable expectation of privacy, the use of an eavesdropping device to surreptitiously overhear or record what he says is a search, regardless of whether investigators physically intruded into a "constitutionally protected area." Moreover, this would be true whether the sensory device the investigators utilized was "unique," was merely "uncommon" (a sophisticated parabolic microphone, for example), or was available at any electronics or department store (for example, a miniature cassette tape recorder).

Given that the Dow majority was aware of the holding in Katz, there is no indication that the majority is seeking to overturn that holding. Thus, the phrase "would raise different and serious questions" is probably nothing more than a man’s home is, for most purposes, a place where he expects privacy, but objects, activities, or statements that he exposes to the "plain view" of outsiders are not "protected" because no intention to keep them to himself has been exhibited. On the other hand, conversations in the open would not be protected against being overheard, for the expectation of privacy under the circumstances would be unreasonable.

183. See supra notes 24-27 and accompanying text (discussing Fourth Amendment’s protections).
185. See supra notes 21-23 (discussing holding of Katz).
186. See supra note 65 (providing similar example by Karo Court).
187. It does not constitute a search, however, to use a device to overhear or record a conversation with the consent of a participant in the conversation. See supra note 31 and accompanying text (discussing “assumption of risk” doctrine that encounter with police informant or undercover agent raises no Fourth Amendment implications). Nor, perhaps, would it be a search to use such a device to intercept a conversation held in the open. Justice Harlan, concurring in Katz, observed that

than sloppy draftsmanship.\textsuperscript{188} Probably the majority was attempting to make the point that photographic surveillance of the shapes of buildings (even buildings shielded from ground-level view) simply cannot compare in intrusiveness to electronic surveillance of conversations held indoors. A further point was that the rule enunciated in 

\textit{Katz} which governs eavesdropping provides only limited guidance in assessing the Fourth Amendment implications of technologically enhanced \textit{visual} surveillance.\textsuperscript{189}

2. Sophistication and “General Availability”

The Court’s remark in \textit{Dow} that a warrant might be required to authorize surveillance of private property with “highly sophisticated surveillance equipment not generally available to the public, such as satellite technology” also prompts numerous questions.\textsuperscript{190} Aerial photography of the sort employed in \textit{Dow}, according to the majority, fails both tests. It is “generally available” enough to permit a private citizen to hire a photographer for a few hundred dollars, and is also not “highly sophisticated” enough.\textsuperscript{191}

Beyond this specific holding, however, uncertainty multiplies. How “not generally available” and how “highly sophisticated” must the equipment be for its use to constitute a search under the Fourth Amendment? What is the proportional significance of the two factors of “general availability” and

\textsuperscript{188} See supra notes 127-29 and accompanying text (discussing similar examples in \textit{Ciraolo} decision).

\textsuperscript{189} Indeed, the \textit{Ciraolo} opinion makes the same basic point. The dissent in \textit{Ciraolo} begins by quoting Justice Harlan’s warning, in his \textit{Katz} concurrence, that to interpret the Fourth Amendment as “proscribing only physical intrusions by police onto private property ‘is, in the present day, bad physics as well as bad law, for reasonable expectations of privacy may be defeated by electronic as well as physical invasion.’ ” California v. \textit{Ciraolo}, 476 U.S. at 215-16 (Powell, J., dissenting) (quoting \textit{Katz} v. United States, 389 U.S. 347, 362 (1967) (Harlan, J., concurring)). The \textit{Ciraolo} majority responded that

\begin{quote}
Justice Harlan’s observations about future electronic interference with private communications were plainly not aimed at simple visual observations from a public place. . . .
\end{quote}

\begin{quote}
Justice Harlan made it clear that he was resting on the reality that one who enters a telephone booth is entitled to assume that his conversation is not being intercepted. This does not translate readily into a rule of constitutional dimensions that one who grows illicit drugs in his backyard is “entitled to assume” his unlawful conduct will not be observed by a passing aircraft—or by a power company repair mechanic on a pole overlooking the yard. . . .
\end{quote}

\begin{quote}
One can reasonably doubt that in 1967 Justice Harlan considered an aircraft within the category of future “electronic” developments that could stealthily intrude upon an individual’s privacy.
\end{quote}


\textsuperscript{190} See supra text accompanying notes 153-55 (discussing \textit{Dow} majority’s observations). Preliminarily, it is worth noting that to speak in terms of whether a warrant “might be” required omits the intermediate step of determining whether a surveillance technique constitutes a search at all. In recent years the Court has expanded somewhat the categories of searches that may be conducted without a warrant, or even without probable cause.

\textsuperscript{191} \textit{Id.}; \textit{Dow Chem. Co. v. United States}, 476 U.S. at 231.
“high sophistication”? How do we measure whether or when such technology has become “generally available”? Once such technology does become “generally available,” would it no longer be considered a search to use it, even if the technology remains “highly sophisticated”? And when today’s “highly sophisticated surveillance equipment” is supplanted by tomorrow’s “new and improved” technology, will “the people” lose their Fourth Amendment “right . . . to be secure, in their . . . houses” and elsewhere, from surveillance employing such equipment?

“What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection.” Is technology the only factor to be considered in defining “knowing exposure”? Does it automatically follow that surveillance with equipment that is not “highly sophisticated” (as the Court used that phrase in Dow), or that is “generally available to the public,” is not a search, and therefore may be used without a warrant or other Fourth Amendment restraints?

Dow does not explicitly address these issues. But unless some additional factor effects the equation, that decision implies that the answer to all of these questions is a simple “yes.” This result would seriously endanger privacy in a wide range of circumstances.

An additional factor is, in fact, struggling to emerge. There are hints of it in Ciraolo and Riley, and something more than hints in Dow. That factor is the nature of the information sought and discovered by the surveillance.

IV. EXPECTATIONS OF PRIVACY: THE INFORMATION SOUGHT AND OBTAINED

Fourth Amendment analysis traditionally treats privacy as an all-or-nothing proposition. Under this approach, an intrusion is an intrusion, whether it reveals intimate details of a person’s life or, by contrast, only a serial number on a piece of stereo equipment. On the other hand, any “knowing exposure” of information to the public in effect waives Fourth Amendment protection from purposeful police surveillance of a similar kind, even if the exposure in question is far more theoretical than real.

In the real world, however, privacy often is not an all-or-nothing proposition. It is a matter of degree, and the degree to which our sense of propriety is offended by surveillance, if at all, depends at least as much upon what is revealed, as upon how it is revealed. If a police officer, seeking to learn whether my car is in the garage attached to my home, lies down in my drive-


194. Arizona v. Hicks, 107 S. Ct. 1149 (1987). This decision, in its exaltation of overly technical niceties over common sense, must rank among the very silliest decisions in the Court’s history.

195. See supra text accompanying note 122 (discussing difference between purposeful police surveillance and casual glance of private air passenger in concept of knowing exposure).
way and shines his flashlight through the half-inch gap between the bottom of
the garage door and the garage floor, I would be annoyed somewhat
by his choice of method, but my ultimate reaction would be, “So what's the big
deal?” What I think of as my “privacy” has not really been invaded, even
though, as an attorney, I know that the garage is within the curtilage of my
home and that the officer's conduct may have violated the Fourth Amend-
ment. I would be far more offended if the police subpoenaed a list of the
movies I have rented from the local video store or the books I have checked
out at the public library. In terms of values, what I choose to watch or read
in the privacy of my own home should be a concern only to me. I would feel
this way even though I realize that by “knowingly exposing” my choice of
movies to the video store or my choice of books to the library, I have “ass-
sumed the risk”\(^{196}\) that this information will be shared with the authorities.\(^ {197}\)

In *Ciraolo*, and even more so in *Dow*, the Court included the nature of the
information sought and discovered as a factor to be considered in deciding
when enhanced surveillance constitutes a search. *Knotts* and *Karo* are consis-
tent with this approach, while *Dunn* may not be.

### A. The Ciraolo and Dow Chemical Decisions

In *On Lee v. United States*,\(^ {198}\) a pre-*Katz* case involving an informant
“wired” with a transmitter, the Court commented gratuitously that “[t]he use
of bifocals, field glasses or the telescope to magnify the object of a witness’
vision is not a forbidden search or seizure, even if they focus without his
knowledge or consent upon what one supposes to be private indiscretions.”\(^ {199}\)
Federal and state courts consistently hold likewise, where the activity under
surveillance is public conduct, even if it is obvious that the suspect hopes he is
not being watched.\(^ {200}\)

As several federal and state courts have recognized, however, different issues
arise if the behavior being observed occurs in private. Several courts have
held, for example, that it *is* a search for police officers to use binoculars or a
telescope to look into the window of a house or apartment, where no compa-
rable view is available to a lawfully positioned naked-eye observer.\(^ {201}\) Since

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196. *See supra* notes 31-35 and accompanying text (addressing assumption of risk limitations on
Fourth Amendment protection).

197. I am not suggesting that the nature of the information sought or obtained should, as a
general proposition, supplant or supplement the current Fourth Amendment focus on location-
oriented privacy. I merely point out that the Fourth Amendment sometimes protects privacies
about which many of us do not care much and often does not protect against disclosures that
offend or embarrass.


199. *Id.* at 754.

200. *See* I W. LAFAVE, *supra* note 2, § 2.2(c) (discussing use of binoculars or telescope to
conduct search).

201. *See*, e.g., United States v. Kim, 415 F. Supp. 1252 (D. Haw. 1976) (use of 800x60 milli-
meter telescope to see into apartment window from closest building to defendant's building one
quarter mile away constitutes search); I W. LAFAVE, *supra* note 2, § 2.2(c) (collected cases ad-
ressing same issue).
binoculars and other such articles are "readily available to the general public" and may not be considered "highly sophisticated," it is uncertain whether such holdings survive Ciraolo and Dow.202

Suppose, for example, that police officers use a high-quality thirty-five millimeter camera and a telephoto lens (available at any camera store for $1,000 or less) from an altitude of 1,000 feet to photograph someone sitting inside a suspected cocaine dealer's fenced-in, Ciraolo-like curtilage. Enlarging the negative in a darkroom, the photo reveals the suspect, sitting at a patio table, weighing a package of white powder. Use of the camera, lens and enlarger magnifies the intrusiveness of the surveillance. Does it do so sufficiently to classify the photography as a search?

Ciraolo provides no direct answer, but the Court hinted strongly that such photography might constitute a search. In rejecting the dissent's assertion that its decision contradicted the "reasonable expectation of privacy" formula that has defined the scope of the Fourth Amendment since Katz, Chief Justice Burger's majority opinion in Ciraolo stressed that aside from the use of the airplane, no technology at all was employed:

In an age where private and commercial flight in the public airways is routine, it is unreasonable for respondent to expect that his marijuana plants were constitutionally protected from being observed with the naked eye from an altitude of 1,000 feet. The Fourth Amendment simply does not require the police traveling in the public airways at this altitude to obtain a warrant in order to observe what is visible to the naked eye.203

In a footnote to this passage, the Court noted that "[t]he State acknowledges that "[a]erial observation of curtilage may become invasive . . . through modern technology which discloses to the senses those intimate associations, objects or activities otherwise imperceptible to police or fellow citizens."

Similarly, in Dow the same five-Justice majority conceded that photographs revealing intimate details might raise constitutional concerns.205 The photographs might raise such concerns, apparently, even in a location like the Dow facility which the Court compared to an open field for purposes of aerial surveillance.206 Although it offered no direct definition of an "intimate detail" in

202. They should, and perhaps do. See infra notes 203-08, 221-25 and accompanying text (applying Ciraolo and Dow holdings).
203. California v. Ciraolo, 476 U.S. 207, 215 (1986); see supra notes 105-06 and accompanying text (aerial photograph not at issue in Ciraolo but significant in Dow).
204. Id. at 215 n.3 (citation omitted).
205. Dow Chem. Co. v. United States, 476 U.S. 227, 238 (1986); see supra text accompanying note 155 (providing quote of "hi-tech" surveillance discussion in Dow). It is uncertain whether the Court is suggesting that all surveillance photographs of private property that reveal intimate details would raise constitutional concerns, or whether such concerns would be raised only if the photographs were taken with "highly sophisticated surveillance equipment not generally available to the public." Dow Chem. Co. v. United States, 476 U.S. at 238.
its "technology" footnote, the majority acknowledged that photographs permitting recognition of objects as small as one-half inch in diameter such as a class ring, identifiable human faces, or secret documents might implicate more serious privacy concerns.

Returning to the hypothetical proposed two paragraphs earlier, bags of white powder and drug packaging paraphernalia presumably also qualify as intimate details, recognition of which, like the suspect's identifiable human face, would implicate serious privacy concerns. However, it is still unclear whether the majority would consider those privacy concerns to be implicated to a significant degree if the camera, lens and enlarger, though of excellent quality, are more "generally available" than, and are not as "highly sophisticated" as, satellite photography or other state-of-the-art equipment.

B. The Knotts, Karo and Dunn Decisions

Knotts and Karo, which concern tracking devices, are consistent with the Ciraolo-Dow emphasis on the nature of the information revealed as a factor to be considered in assessing whether technologically enhanced surveillance is a search. Knotts simply holds that it is not a search to monitor electronically the route a person travels on the public highways, information which is knowingly exposed to the public; Karo holds that it is a search to monitor electronically the presence of a physical object inside a house or other private location, or information "that could not have been visually verified."

207. Id. at 239 n.6.
208. Id. at 239 n.5.
209. This hypothetical is distinguishable from the facts involved in United States v. Place, 462 U.S. 696 (1983) (exposing suspect's luggage to trained narcotics detection dog does not constitute search of luggage), and United States v. Jacobsen, 466 U.S. 109 (1984) (conducting chemical test on quantity of powder does not constitute search of the powder). In each of those cases, the Court held that an investigative technique that reveals only the presence or absence of contraband is not a search. The Court reasoned that since there is no right to possess contraband drugs at all, there is no right to possess them privately, and the limited information revealed by these procedures did not intrude into privacy rights that are protected. The aerial photographs hypothesized in the text, by contrast, do not reveal the presence or absence of contraband. The bags of powder probably contain contraband, but we do not know that with the same degree of certainty as the dog or chemical test would reveal. The photographs, however, do reveal other facts, such as the fact that the defendant is sitting in the yard apparently packaging something.
210. See supra text accompanying notes 66-74 (discussing police use of beepered container to locate suspect after having lost sight of him).
212. See supra text accompanying notes 83-85 (Karo holding explicitly applicable to locations other than private residences where recognized privacy expectation exists).
213. United States v. Karo, 468 U.S. 705, 717 (1984); see supra note 81 and accompanying text (use of beeper distinguished from facts in Knotts). If Karo's chemical container had been located in a Ciraolo-like back yard and was visible to naked-eye surveillance from navigable airspace, Ciraolo makes clear that such surveillance would not constitute a search. The container's very visibility would preclude its being classified as an "intimate detail." If, however, its presence could be verified only by use of binoculars or image-magnifying photography, we would be back in the Ciraolo-Dow uncertainty again.
The *Dunn* decision, by contrast, fits less comfortably in this analysis. If no curtains cover the window to a sidewalk-level apartment, no search occurs when a police officer glances through the window and spots incriminating evidence inside.\(^{214}\) Now, suppose curtains cover the window. Although there is a gap in the curtains, someone standing outside cannot see in because the gap is so small that not enough daylight from outside gets through to illuminate the room. If a police officer shines his flashlight through the gap, however, he can see the contents of the room. Would this window be classified as “essentially open” and therefore as constitutionally unprotected as *Dunn*’s imperfectly screened barn door?\(^{215}\)

There is, of course, an obvious distinction between *Dunn*’s barn and the window of a house or apartment. Homes enjoy greater Fourth Amendment protection than business locations, even assuming the barn is within the protection afforded to the latter. Still, “what a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection.”\(^{216}\) Given the ready availability of flashlights, like it or not we “assume the risk”\(^{217}\) that anyone (including a police officer) who wishes to do so can shine a flashlight through an imperfectly curtained window.

**C. Evaluation**

Whether visual exposure is a risk that the Fourth Amendment *requires* us to assume, however, is another question. To answer it properly, we must consider values and norms as well as the practical realities of life.\(^{218}\) In *Dunn*, the Court neither considered those values and norms, nor attempted to answer the underlying question. There was, perhaps, no real need to do so because a barn is not a home. Still, *Dunn* does little to undercut a broad interpretation of the passage in *Brown* that it may well be that “the use of artificial means to illuminate a darkened area”—*any* darkened area—“simply does not constitute a search, and thus triggers no Fourth Amendment protection.”\(^{219}\)

But this sweeps too broadly. *Dunn*’s application of the *Brown* formula to an imperfectly curtained barn entrance already stretches the “knowing exposure” concept beyond its natural limits. Applied to the almost-but-not-quite-perfectly curtained residential window, the *Brown-Dunn* formula would violate “understandings” and deeply held values “that are recognized and permitted by society.”\(^{220}\)

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214. “What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection.” *Katz v. United States*, 389 U.S. 347, 351 (1967).


217. *See supra* notes 28-30 and accompanying text (discussing concept of knowing exposure).

218. *See supra* text accompanying notes 27, 34-35 (discussing possible normative considerations in applying knowing exposure and assumption of risk doctrines).


Ciraolo and Dow, on the other hand, are less susceptible to overly broad application, precisely because the Court in each case focused on what was observed, as well as upon the equipment that was used. Concededly, Chief Justice Burger's opinions in Ciraolo and Dow deserve much of the criticism levelled at them forcefully and almost mockingly in Justice Powell's dissents. The majority could have done a better job of explaining and defending its reasoning.

Nevertheless, it is the Dow-Ciraolo majority, not the dissent, that properly focused on the facts of each case, and not on extravagant generalizations. In several respects, Ciraolo, and even more so Dow, are cases of first impression in which the Court took care to limit its holdings. If the limits are less clear than we would like them to be, perhaps that is understandable, given the largely uncharted territory of law and technology into which the Court was venturing.

Setting the shortcomings of the Dow-Ciraolo majority opinions aside, one can only find that the Court decided correctly. It would offend common sense for a person to have a right to privacy with regard to a ten-foot high plant that is cultivated out-of-doors, the illegal character of which could be recognized by a trained observer's naked-eye view from a thousand feet away. Similarly, it would offend common sense for a chemical company to have a right to privacy in the very size and shape of large industrial structures. Law that flies in the face of common sense is rarely good law. The decisions in Ciraolo and Dow are consistent with common sense.

There is, of course, a drawback. Determining when visual surveillance (or its scientific equivalent) constitutes a "search" would be a complex enough task if technology was the only "non-traditional" factor. Including the nature of the information sought and obtained in the equation adds an additional layer of complexity which would be highly subjective and unpredictable at least until the Court provides further amplification. Lower courts will have to speculate as to whether it is a search, for example, to use binoculars to view a marijuana plant—or an identifiable face—in a Ciraolo-like back yard or apartment window.

No doubt the Court will have ample opportunities to resolve such difficult questions. The time to formulate "extravagant generalizations" will come (if at all) after the Court and Congress have had additional opportunities to

221. This is not to suggest that the dissents are free of lapses here and there. See supra notes 130-32 and accompanying text (discussing pit-falls in Ciraolo dissenting opinion).

222. See supra notes 126-29, 156-60 and accompanying text (reviewing specific criticisms).

223. Dow Chem. Co. v. United States, 476 U.S. 227, 238 n.5 (1986); see supra text accompanying note 160 (providing example of detailed factual considerations by majority).

224. It is also likely that the Dow and Ciraolo decisions speak less clearly than some members of the majority would like because, had they pressed too hard, other members of the majority might have gone over to the dissent.

225. The Court's reticence to apply "extravagant generalizations" is praiseworthy for another reason. Deciding where to draw the line between police efficiency and protection of privacy is ultimately a value judgment; and Congress, not the Court, is the primary definer of social values.
ponder the application of the Fourth Amendment to visual surveillance technology.

D. Postscript: Florida v. Riley

In Florida v. Riley,226 decided as this Article went to press, a four-Justice plurality, like the Ciraolo and Dow majorities, suggested in passing that whether technologically enhanced surveillance should be classified as a search might depend in part upon whether the surveillance revealed "intimate details connected with the use of the home or curtilage."227 Riley, like Ciraolo, involved aerial surveillance of marijuana cultivation. The cases differed factually only in that: (i) in Riley, the marijuana was observed through openings in the roof and sides of a greenhouse within the curtilage of a home, rather than in a fenced-in back yard within the curtilage of a home; and (ii) the officers in Riley were in a helicopter flying at 400 feet, not a fixed-wing aircraft at 1,000 feet. A bare majority concluded that this did not constitute a search.228

Dissenting, Justice Brennan derided the concept that the nature of the activity observed must be "intimate" to be protected by the Constitution: "What, one wonders, is meant by 'intimate details'? If the police had observed Riley embracing his wife in the backyard greenhouse, would we then say that his

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For the Court to have handed down a broad constitutional rule might have precluded, or at least dissuaded, Congress from considering the issue.


227. Justice White’s plurality opinion concludes:

[There is no] intimation here that the helicopter interfered with respondent’s normal use of the greenhouse or other parts of the curtilage. As far as this record reveals, no intimate details connected with the use of the home or curtilage were observed, and there was no undue noise, no wind, dust, or threat of injury. In these circumstances, there was no violation of the Fourth Amendment.

Id. at 4127 (White, J., joined by Rehnquist, C.J., Scalia & Kennedy, JJ.).

228. The four-Justice plurality concluded that, at least in the absence of disclosure of "intimate details," the fact that surveillance was conducted from public airspace at an altitude within Federal Aviation Administration ("FAA") safety guidelines was dispositive. Id. at 4127 & n.2. Justice O’Connor, concurring in the result, criticised the plurality for relying "too heavily" on FAA regulations to resolve Fourth Amendment issues. The important question, she insisted, was "whether the helicopter was ... at an altitude at which members of the public travel with sufficient regularity" to render Riley’s expectation of privacy from aerial observation unreasonable. Id. at 4128 (O’Connor, J., concurring in the judgment). Justice O’Connor concurred in the judgment because Riley had offered no evidence on this topic, thereby failing to satisfy the defendant’s burden of proof at a suppression hearing. Id. The four dissenting Justices likewise decried the plurality’s reliance on FAA regulations. Justice Brennan, with whom Justices Marshall and Stevens joined, asserted that aerial surveillance from a 400-foot altitude was unreasonable per se. Id. at 4131 (Brennan, J., dissenting, joined by Marshall & Stevens, JJ.). Justice Blackmun, dissenting separately, argued that the state, not the defendant, had the burden of proof on the privacy expectation issue, and that the case should be remanded to give the state an opportunity to offer such evidence. Id. at 4132 (Blackmun, J., dissenting).
reasonable expectation of privacy had been infringed?" As Justice Brennan sarcastically notes, the Court has not yet offered a clear definition of "intimate activity," but surely an embrace between husband and wife within the curtilage of their home qualifies. Thus, if scientifically enhanced surveillance is capable of observing such conduct (and of identifying it as such), this should weigh heavily toward classifying the surveillance as a search, even if the surveillance equipment is generally available and is not particularly sophisticated.

The aerial photographs in Dow were not capable or revealing "intimate" activity or details. Presumably, the same is true of the naked-eye aerial surveillance from a 1,000-foot altitude in Ciraolo. The surveillance in Riley is much more likely to have provided the investigators with that capability. The Riley plurality's refusal to consider this factor is unfortunate.

V. CONCLUSION

Since 1983, the Supreme Court has decided seven cases that focus on when scientifically enhanced visual surveillance constitutes a "search" subject to Fourth Amendment restrictions and standards. In addressing this issue, the Court, sometimes implicitly and sometimes explicitly, has considered three separate factors: the sophistication (or sense-enhancing capacity) of the surveillance equipment; its availability to the general public; and the nature of the information sought and revealed by the surveillance.

The Court's approach to technology per se is perfectly plausible. On one hand, the more sophisticated the equipment, the more its use is likely to intrude. On the other hand, if the equipment is readily available to the general public, it often may be unreasonable for a person to expect constitutional pro-

229. Id. at 4131 (Brennan, J., dissenting, joined by Marshall & Stevens, JJ.). Justice Brennan also demanded to know "[w]here in the Fourth Amendment or in our cases is there any warrant for imposing a requirement that the activity observed must be 'intimate' in order to be protected by the Constitution?" Id. Justice Brennan's indignation is a bit tardy: the Court had suggested this as a relevant factor in Dow, Ciraolo and Dunn. See supra text accompanying notes 155-60 (discussing argument in Dow); supra text accompanying notes 112-13 (discussing majority position in Ciraolo); supra note 53 (discussing four-part test enunciated in Dunn). Moreover, the Court applied a very similar principle in Katz v. United States, 389 U.S. 347 (1967), when it held that what a person says into a telephone in a public telephone booth is protected by the Fourth Amendment. See supra text accompanying notes 21-23 (discussing holding in Katz).

230. In Dow, the Court indicated that aerial photography capable of recognizing a class ring or identifying a human face would "implicate serious privacy concerns." Dow Chem. Co. v. United States, 476 U.S. 227, 239 n.5 (1985); see supra text accompanying note 160 (quoting Dow majority's argument).

231. It would be unwise to classify the surveillance as a search or not depending solely on what the officers actually sought and observed, without considering the privacy implications of what they might have seen.

232. Thus, use of a flashlight to peer through a substantially but imperfectly curtained room of a street-level apartment would implicate serious privacy concerns, and should be considered a search.

233. See supra text accompanying notes 155, 160 (quoting Dow majority's assessments of degree of detail observed).
tection from its use. The Brown and Dunn decisions involved the use of the common flashlight, which must rank near the bottom in sophistication and at the top of the list of general availability. Not surprisingly, the Court thus held that the flashlight's use was not a search\textsuperscript{234} (even though in Dunn the area illuminated by the flashlight was a business location presumably protected by the Fourth Amendment—a fact to which the Court gave less consideration than it deserved).\textsuperscript{235} The Knotts and Karo decisions focus on electronic tracking devices, equipment that is somewhat sophisticated and not generally available. Knotts holds that use of this device to track public movements is not a search, while Karo holds that using it to determine the contents of a private location is. Each of these decisions is consistent with the "sophistication-availability" test for assessing the Fourth Amendment implications of visual surveillance technology. Even the result reached in Ciraolo and Riley in which the majority and plurality opinions ignored the technological aspects of naked-eye aerial surveillance and held that such surveillance from publicly navigable airspace is not a search, is consistent with this test.

Ironically, the Court's most explicit application of this test seems to make a mockery of it. In Dow, the Court blandly insisted that use of a $22,000, state-of-the-art aerial photography camera—a camera that dramatically enhanced what was visible to the naked eye—failed both prongs of its test. The equipment was both too "generally available" and insufficiently sophisticated for the surveillance to be considered a search.\textsuperscript{236} If Dow sets the standard for Fourth Amendment assessment of visual surveillance technology in general, the result could seriously threaten privacy.

It is clear, however, that the Court was well aware of this possibility. The third factor in the Court's visual surveillance decisions—the nature of the information sought and obtained by the surveillance—may provide precisely the limiting principle needed. Although in Ciraolo the Court concluded that the aerial surveillance of a suburban back yard fenced to prevent ground-level surveillance was not a search, the Court emphasized that the only significant information the officers obtained by the surveillance was to confirm the presence of ten-foot tall marijuana plants growing in the yard. Similarly, although Dow held that the state-of-the-art image magnification of private property used in that case did not constitute a search, the Court emphasized that the surveillance revealed only the shape and location of large industrial structures. Each decision also calls attention to what kind of information the surveillance did not reveal. In Ciraolo, the Court noted that the aerial surveillance did not disclose "intimate associations, objects or activities."\textsuperscript{237} In Dow, the Court emphasized that the surveillance revealed neither secret documents\textsuperscript{238} nor "inti-

\textsuperscript{234} See supra notes 42-59 and accompanying text (discussing cases concerning artificial illumination).
\textsuperscript{235} See supra notes 54-69, 214-17 and accompanying text (discussing Dunn).
\textsuperscript{236} See supra notes 151-55 and accompanying text (discussing Dow).
\textsuperscript{237} See supra notes 112-204 and accompanying text (discussing Dunn and Dow).
\textsuperscript{238} See supra notes 160-208 and accompanying text (discussing aerial surveillance in Dow).
mate activity associated with the 'sanctity of a man's home and the privacies of life.' 239

The emergence of this third factor introduces a new area of uncertainty into Fourth Amendment jurisprudence. At present few guidelines exist as to what kind of information is protected from unauthorized technologically enhanced visual surveillance, and what information is not. Thus, judges may be required to rule on these situations with little to guide them but their personal instincts about the information obtained in any given case.

Moreover, confusion is inevitable as to the comparative significance of the three factors—sophistication (sense-enhancement) and availability of the equipment, and informational privacy expectations—in any given case. What result should obtain, for example, if police officers use binoculars to watch what a person does in his or her home, if no comparable view is available to a naked-eye observer from a "public thoroughfare" or an "open field"? For Fourth Amendment purposes, are binoculars to be considered sufficiently "low tech" to be classified with the flashlights used in Brown or Dunn, or sufficiently "hi tech" to be classified with the electronic tracking device used in Karo? The decisions to date provide no indication.

These potential difficulties and uncertainties could have been avoided if the Court had held, in Riley, Ciraolo and Dow, that when an owner takes sufficient measures to prevent ground-level visual surveillance of a location, any technology that frustrates those measures is a search. Nevertheless, the Court properly rejected this approach because it would have produced a fundamentally absurd result. It would defy common sense to recognize a right to "privacy" in a ten-foot plant visible from 1,000 feet up, let alone in the shapes of large industrial structures. Surveillance technology presents complex questions of law, fact and values. The Court wisely avoided attempting to resolve them with simplistic answers. No doubt there will be ample opportunities in the future to address those questions more fully.