SUPREME COURT OF THE UNITED STATES

No. 99–8508

DANNY LEE KYLLO, PETITIONER *v.* UNITED STATES

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

[June 11, 2001]

JUSTICE SCALIA delivered the opinion of the Court.

This case presents the question whether the use of a thermal-imaging device aimed at a private home from a public street to detect relative amounts of heat within the home constitutes a "search" within the meaning of the Fourth Amendment.

I

In 1991 Agent William Elliott of the United States Department of the Interior came to suspect that marijuana was being grown in the home belonging to petitioner Danny Kyllo, part of a triplex on Rhododendron Drive in Florence, Oregon. Indoor marijuana growth typically requires high-intensity lamps. In order to determine whether an amount of heat was emanating from petitioner's home consistent with the use of such lamps, at 3:20 a.m. on January 16, 1992, Agent Elliott and Dan Haas used an Agema Thermovision 210 thermal imager to scan the triplex. Thermal imagers detect infrared radiation, which virtually all objects emit but which is not visible to the naked eye. The imager converts radiation into images based on relative warmth– black is cool, white is hot, shades of gray connote relative differences; in that

respect, it operates somewhat like a video camera showing heat images. The scan of Kyllo's home took only a few minutes and was performed from the passenger seat of Agent Elliott's vehicle across the street from the front of the house and also from the street in back of the house. The scan showed that the roof over the garage and a side wall of petitioner's home were relatively hot compared to the rest of the home and substantially warmer than neighboring homes in the triplex. Agent Elliott concluded that petitioner was using halide lights to grow marijuana in his house, which indeed he was. Based on tips from informants, utility bills, and the thermal imaging, a Federal Magistrate Judge issued a warrant authorizing a search of petitioner's home, and the agents found an indoor growing operation involving more than 100 plants. Petitioner was indicted on one count of manufacturing marijuana, in violation of 21 U. S. C. §841(a)(1). He unsuccessfully moved to suppress the evidence seized from his home and then entered a conditional guilty plea.

The Court of Appeals for the Ninth Circuit remanded the case for an evidentiary hearing regarding the intrusiveness of thermal imaging. On remand the District Court found that the Agema 210 "is a non-intrusive device which emits no rays or beams and shows a crude visual image of the heat being radiated from the outside of the house"; it "did not show any people or activity within the walls of the structure"; "[t]he device used cannot penetrate walls or windows to reveal conversations or human activities"; and "[n]o intimate details of the home were observed." Supp. App. to Pet. for Cert. 39–40. Based on these findings, the District Court upheld the validity of the warrant that relied in part upon the thermal imaging, and reaffirmed its denial of the motion to suppress. A divided Court of Appeals initially reversed, 140 F. 3d 1249 (1998), but that opinion was withdrawn and the panel (after a change in composition) affirmed, 190 F. 3d 1041

(1999), with Judge Noonan dissenting. The court held that petitioner had shown no subjective expectation of privacy because he had made no attempt to conceal the heat escaping from his home, *id.*, at 1046, and even if he had, there was no objectively reasonable expectation of privacy because the imager "did not expose any intimate details of Kyllo's life," only "amorphous 'hot spots' on the roof and exterior wall," *id.*, at 1047. We granted certiorari. 530 U. S. 1305 (2000).

II

The Fourth Amendment provides that "[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated." "At the very core" of the Fourth Amendment "stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion." *Silverman* v. *United States*, 365 U. S. 505, 511 (1961). With few exceptions, the question whether a warrantless search of a home is reasonable and hence constitutional must be answered no. See *Illinois* v. *Rodriguez*, 497 U. S. 177, 181 (1990); *Payton* v. *New York*, 445 U. S. 573, 586 (1980).

On the other hand, the antecedent question of whether or not a Fourth Amendment "search" has occurred is not so simple under our precedent. The permissibility of ordinary visual surveillance of a home used to be clear because, well into the 20th century, our Fourth Amendment jurisprudence was tied to common-law trespass. See, *e.g.*, *Goldman* v. *United States*, 316 U. S. 129, 134–136 (1942); *Olmstead* v. *United States*, 277 U. S. 438, 464–466 (1928). Cf. *Silverman* v. *United States, supra*, at 510–512 (technical trespass not necessary for Fourth Amendment violation; it suffices if there is "actual intrusion into a constitutionally protected area"). Visual surveillance was unquestionably lawful because "'the eye

cannot by the laws of England be guilty of a trespass.'" *Boyd* v. *United States*, 116 U. S. 616, 628 (1886) (quoting *Entick* v. *Carrington*, 19 How. St. Tr. 1029, 95 Eng. Rep. 807 (K. B. 1765)). We have since decoupled violation of a person's Fourth Amendment rights from trespassory violation of his property, see *Rakas* v. *Illinois*, 439 U. S. 128, 143 (1978), but the lawfulness of warrantless visual surveillance of a home has still been preserved. As we observed in *California* v. *Ciraolo*, 476 U. S. 207, 213 (1986), "[t]he Fourth Amendment protection of the home has never been extended to require law enforcement officers to shield their eyes when passing by a home on public thoroughfares."

One might think that the new validating rationale would be that examining the portion of a house that is in plain public view, while it is a "search"[1] despite the absence of trespass, is not an "unreasonable" one under the Fourth Amendment. See *Minnesota* v. *Carter*, 525 U. S. 83, 104 (1998) (BREYER, J., concurring in judgment). But in fact we have held that visual observation is no "search" at all– perhaps in order to preserve somewhat more intact our doctrine that warrantless searches are presumptively unconstitutional. See *Dow Chemical Co.* v. *United States*, 476 U. S. 227, 234–235, 239 (1986). In assessing when a search is not a search, we have applied somewhat in reverse the principle first enunciated in *Katz* v. *United States*, 389 U. S. 347 (1967). *Katz* involved eavesdropping by means of an electronic listening device placed on the outside of a telephone booth– a location not within the catalog ("persons, houses, papers, and effects") that the

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[1]When the Fourth Amendment was adopted, as now, to "search" meant "[t]o look over or through for the purpose of finding something; to explore; to examine by inspection; as, to *search* the house for a book; to *search* the wood for a thief." N. Webster, An American Dictionary of the English Language 66 (1828) (reprint 6th ed. 1989).

Fourth Amendment protects against unreasonable searches. We held that the Fourth Amendment nonetheless protected Katz from the warrantless eavesdropping because he "justifiably relied" upon the privacy of the telephone booth. *Id.*, at 353. As Justice Harlan's oft-quoted concurrence described it, a Fourth Amendment search occurs when the government violates a subjective expectation of privacy that society recognizes as reasonable. See *id.*, at 361. We have subsequently applied this principle to hold that a Fourth Amendment search does *not* occur– even when the explicitly protected location of a *house* is concerned– unless "the individual manifested a subjective expectation of privacy in the object of the challenged search," and "society [is] willing to recognize that expectation as reasonable." *Ciraolo, supra,* at 211. We have applied this test in holding that it is not a search for the police to use a pen register at the phone company to determine what numbers were dialed in a private home, *Smith* v. *Maryland*, 442 U. S. 735, 743–744 (1979), and we have applied the test on two different occasions in holding that aerial surveillance of private homes and surrounding areas does not constitute a search, *Ciraolo, supra*; *Florida* v. *Riley*, 488 U. S. 445 (1989).

The present case involves officers on a public street engaged in more than naked-eye surveillance of a home. We have previously reserved judgment as to how much technological enhancement of ordinary perception from such a vantage point, if any, is too much. While we upheld enhanced aerial photography of an industrial complex in *Dow Chemical*, we noted that we found "it important that this is *not* an area immediately adjacent to a private home, where privacy expectations are most heightened," 476 U. S., at 237, n. 4 (emphasis in original).

III

It would be foolish to contend that the degree of privacy secured to citizens by the Fourth Amendment has been entirely unaffected by the advance of technology. For example, as the cases discussed above make clear, the technology enabling human flight has exposed to public view (and hence, we have said, to official observation) uncovered portions of the house and its curtilage that once were private. See *Ciraolo*, *supra*, at 215. The question we confront today is what limits there are upon this power of technology to shrink the realm of guaranteed privacy.

The *Katz* test– whether the individual has an expectation of privacy that society is prepared to recognize as reasonable– has often been criticized as circular, and hence subjective and unpredictable. See 1 W. LaFave, Search and Seizure §2.1(d), pp. 393–394 (3d ed. 1996); Posner, The Uncertain Protection of Privacy by the Supreme Court, 1979 S. Ct. Rev. 173, 188; *Carter*, *supra*, at 97 (SCALIA, J., concurring). But see *Rakas*, *supra*, at 143–144, n. 12. While it may be difficult to refine *Katz* when the search of areas such as telephone booths, automobiles, or even the curtilage and uncovered portions of residences are at issue, in the case of the search of the interior of homes– the prototypical and hence most commonly litigated area of protected privacy– there is a ready criterion, with roots deep in the common law, of the minimal expectation of privacy that *exists*, and that is acknowledged to be *reasonable*. To withdraw protection of this minimum expectation would be to permit police technology to erode the privacy guaranteed by the Fourth Amendment. We think that obtaining by sense-enhancing technology any information regarding the interior of the home that could not otherwise have been obtained without physical "intrusion into a constitutionally protected area," *Silverman*, 365 U. S., at 512, constitutes a search– at least where (as here) the technology in question is not in general public

use. This assures preservation of that degree of privacy against government that existed when the Fourth Amendment was adopted. On the basis of this criterion, the information obtained by the thermal imager in this case was the product of a search.[2]

The Government maintains, however, that the thermal imaging must be upheld because it detected "only heat radiating from the external surface of the house," Brief for United States 26. The dissent makes this its leading point, see *post*, at 1, contending that there is a fundamental difference between what it calls "off-the-wall" observations and "through-the-wall surveillance." But just as a thermal imager captures only heat emanating from a house, so also a powerful directional microphone picks up only sound emanating from a house–and a satellite capable of scanning from many miles away would pick up only visible light emanating from a house. We rejected such a mechanical interpretation of the Fourth Amendment in *Katz*, where the eavesdropping device picked up only

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[2] The dissent's repeated assertion that the thermal imaging did not obtain information regarding the interior of the home, *post*, at 3, 4 (opinion of STEVENS, J.), is simply inaccurate. A thermal imager reveals the relative heat of various rooms in the home. The dissent may not find that information particularly private or important, see *post*, at 4, 5, 10, but there is no basis for saying it is not information regarding the interior of the home. The dissent's comparison of the thermal imaging to various circumstances in which outside observers might be able to perceive, without technology, the heat of the home– for example, by observing snowmelt on the roof, *post*, at 3– is quite irrelevant. The fact that equivalent information could sometimes be obtained by other means does not make lawful the use of means that violate the Fourth Amendment. The police might, for example, learn how many people are in a particular house by setting up year-round surveillance; but that does not make breaking and entering to find out the same information lawful. In any event, on the night of January 16, 1992, no outside observer could have discerned the relative heat of Kyllo's home without thermal imaging.

sound waves that reached the exterior of the phone booth. Reversing that approach would leave the homeowner at the mercy of advancing technology– including imaging technology that could discern all human activity in the home. While the technology used in the present case was relatively crude, the rule we adopt must take account of more sophisticated systems that are already in use or in development.[3] The dissent's reliance on the distinction between "off-the-wall" and "through-the-wall" observation is entirely incompatible with the dissent's belief, which we discuss below, that thermal-imaging observations of the intimate details of a home are impermissible. The most sophisticated thermal imaging devices continue to measure heat "off-the-wall" rather than "through-the-wall"; the dissent's disapproval of those more sophisticated thermal-imaging devices, see *post*, at 10, is an acknowledgement that there is no substance to this distinction. As for the dissent's extraordinary assertion that anything learned through "an inference" cannot be a search, see *post*, at 4–5, that would validate even the "through-the-wall" technologies that the dissent purports to disapprove. Surely the dissent does not believe that the through-the-wall radar or ultrasound technology produces an 8-by-10 Kodak glossy that needs no analysis (*i.e.*, the making of inferences).

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[3] The ability to "see" through walls and other opaque barriers is a clear, and scientifically feasible, goal of law enforcement research and development. The National Law Enforcement and Corrections Technology Center, a program within the United States Department of Justice, features on its Internet Website projects that include a "Radar-Based Through-the-Wall Surveillance System," "Handheld Ultrasound Through the Wall Surveillance," and a "Radar Flashlight" that "will enable law officers to detect individuals through interior building walls." www.nlectc.org/techproj/ (visited May 3, 2001). Some devices may emit low levels of radiation that travel "through-the-wall," but others, such as more sophisticated thermal imaging devices, are entirely passive, or "off-the-wall" as the dissent puts it.

And, of course, the novel proposition that inference insulates a search is blatantly contrary to *United States* v. *Karo*, 468 U. S. 705 (1984), where the police "inferred" from the activation of a beeper that a certain can of ether was in the home. The police activity was held to be a search, and the search was held unlawful.[4]

The Government also contends that the thermal imaging was constitutional because it did not "detect private activities occurring in private areas," Brief for United States 22. It points out that in *Dow Chemical* we observed that the enhanced aerial photography did not reveal any "intimate details." 476 U. S., at 238. *Dow Chemical*, however, involved enhanced aerial photography of an industrial complex, which does not share the Fourth Amendment sanctity of the home. The Fourth Amendment's protection of the home has never been tied to measurement of the quality or quantity of information obtained. In *Silverman*, for example, we made clear that any physical invasion of the structure of the home, "by even a fraction of an inch," was too much, 365 U. S., at 512, and there is certainly no exception to the warrant requirement for the officer who barely cracks open the

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[4] The dissent asserts, *post*, at 5, n. 3, that we have misunderstood its point, which is not that inference *insulates* a search, but that inference alone is *not* a search. If we misunderstood the point, it was only in a good-faith effort to render the point germane to the case at hand. The issue in this case is not the police's allegedly unlawful inferencing, but their allegedly unlawful thermal-imaging measurement of the emanations from a house. We say such measurement is a search; the dissent says it is not, because an inference is not a search. We took that to mean that, since the technologically enhanced emanations had to be the basis of inferences before anything inside the house could be known, the use of the emanations could not be a search. But the dissent certainly knows better than we what it intends. And if it means only that an inference is not a search, we certainly agree. That has no bearing, however, upon whether hi-tech measurement of emanations from a house is a search.

front door and sees nothing but the nonintimate rug on the vestibule floor. In the home, our cases show, *all* details are intimate details, because the entire area is held safe from prying government eyes. Thus, in *Karo*, *supra*, the only thing detected was a can of ether in the home; and in *Arizona* v. *Hicks*, 480 U. S. 321 (1987), the only thing detected by a physical search that went beyond what officers lawfully present could observe in "plain view" was the registration number of a phonograph turntable. These were intimate details because they were details of the home, just as was the detail of how warm— or even how relatively warm— Kyllo was heating his residence.[5]

Limiting the prohibition of thermal imaging to "intimate details" would not only be wrong in principle; it would be impractical in application, failing to provide "a workable accommodation between the needs of law enforcement and the interests protected by the Fourth Amendment," *Oliver* v. *United States*, 466 U. S. 170, 181 (1984). To begin with, there is no necessary connection between the sophistication of the surveillance equipment and the "intimacy" of the details that it observes— which means that one cannot say (and the police cannot be assured) that use of the relatively crude equipment at issue here will always be lawful. The Agema Thermovision 210 might disclose, for example, at what hour each night the lady of the house takes her daily sauna and bath— a detail that many would consider "intimate"; and a much more sophisticated sys-

[5] The Government cites our statement in *California* v. *Ciraolo,* 476 U. S. 207 (1986), noting apparent agreement with the State of California that aerial surveillance of a house's curtilage could become "'invasive'" if "'modern technology'" revealed "'those intimate associations, objects or activities otherwise imperceptible to police or fellow citizens.'" *Id.,* at 215, n. 3 (quoting brief of the State of California). We think the Court's focus in this second-hand dictum was not upon intimacy but upon otherwise-imperceptibility, which is precisely the principle we vindicate today.

tem might detect nothing more intimate than the fact that someone left a closet light on. We could not, in other words, develop a rule approving only that through-the-wall surveillance which identifies objects no smaller than 36 by 36 inches, but would have to develop a jurisprudence specifying which home activities are "intimate" and which are not. And even when (if ever) that jurisprudence were fully developed, no police officer would be able to know *in advance* whether his through-the-wall surveillance picks up "intimate" details— and thus would be unable to know in advance whether it is constitutional.

The dissent's proposed standard— whether the technology offers the "functional equivalent of actual presence in the area being searched," *post*, at 7— would seem quite similar to our own at first blush. The dissent concludes that *Katz* was such a case, but then inexplicably asserts that if the same listening device only revealed the volume of the conversation, the surveillance would be permissible, *post*, at 10. Yet if, without technology, the police could not discern volume without being actually present in the phone booth, JUSTICE STEVENS should conclude a search has occurred. Cf. *Karo, supra*, at 735 (STEVENS, J., concurring in part and dissenting in part) ("I find little comfort in the Court's notion that no invasion of privacy occurs until a listener obtains some significant information by use of the device. . . . A bathtub is a less private area when the plumber is present even if his back is turned"). The same should hold for the interior heat of the home if only a person present in the home could discern the heat. Thus the driving force of the dissent, despite its recitation of the above standard, appears to be a distinction among different types of information— whether the "homeowner would even care if anybody noticed," *post*, at 10. The dissent offers no practical guidance for the application of this standard, and for reasons already discussed, we believe there can be none. The people in their houses, as

well as the police, deserve more precision.[6]

We have said that the Fourth Amendment draws "a firm line at the entrance to the house," *Payton*, 445 U. S., at 590. That line, we think, must be not only firm but also bright– which requires clear specification of those methods of surveillance that require a warrant. While it is certainly possible to conclude from the videotape of the thermal imaging that occurred in this case that no "significant" compromise of the homeowner's privacy has occurred, we must take the long view, from the original meaning of the Fourth Amendment forward.

> "The Fourth Amendment is to be construed in the light of what was deemed an unreasonable search and seizure when it was adopted, and in a manner which will conserve public interests as well as the interests and rights of individual citizens." *Carroll* v. *United States*, 267 U. S. 132, 149 (1925).

Where, as here, the Government uses a device that is not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, the surveillance is a "search" and is presumptively unreasonable without a warrant.

Since we hold the Thermovision imaging to have been an unlawful search, it will remain for the District Court to determine whether, without the evidence it provided, the

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[6] The dissent argues that we have injected potential uncertainty into the constitutional analysis by noting that whether or not the technology is in general public use may be a factor. See *post*, at 7–8. That quarrel, however, is not with us but with this Court's precedent. See *Ciraolo*, *supra*, at 215 ("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"). Given that we can quite confidently say that thermal imaging is not "routine," we decline in this case to reexamine that factor.

search warrant issued in this case was supported by probable cause– and if not, whether there is any other basis for supporting admission of the evidence that the search pursuant to the warrant produced.

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The judgment of the Court of Appeals is reversed; the case is remanded for further proceedings consistent with this opinion.

It is so ordered.