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Fourth Amendment Search - Fuzzy Shades of Gray: The New Bright-Line Rule in Determining When the Use of Technology Constitutes a Search - *Kyllo v. United States*, 121 S. Ct. 2038 (2001)

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**FOURTH AMENDMENT SEARCH—Fuzzy Shades of Gray:
The New “Bright-Line” Rule in Determining When the Use
of Technology Constitutes a Search. *Kyllo v. United States*,
121 S. Ct. 2038 (2001).**

INTRODUCTION

In 1991, Special Agent William Elliott of the Department of Interior, Bureau of Land Management, began to suspect that Danny Kyllo was growing marijuana in his home.¹ Mr. Kyllo lived in Florence, Oregon, in a triplex on Rhododendron Drive.² At 3:20 a.m. on January 16, 1992, Special Agent Elliott and Sergeant Daniel Hass of the Oregon National Guard used an Agema Thermovision 210 thermal imager to scan the triplex.³ Agent Elliot and Sgt. Hass scanned the front and back of the triplex from the passenger seat of Agent Elliott’s vehicle while parked

1. *Kyllo v. United States*, 121 S. Ct. 2038, 2041 (2001); *United States v. Kyllo*, 809 F. Supp. 787, 789 (D. Or. 1992). A joint investigation conducted by the Bureau of Land Management, the Tillamook County Sheriff’s Department, and the Oregon State Police, had originally focused on Sam Shook. *See* Brief for the United States at 2, *Kyllo v. United States*, 121 S. Ct. 2038 (2001) (No. 99-8508) [hereinafter Brief for the U.S.]. The Bureau of Land Management was involved in a task force of officers investigating the growing and distribution of marijuana. *Id.* The Sheriff’s Department and State Police received a tip that Sam Shook was assisting others in growing marijuana, and got involved in the investigation after they and passed this tip on to the above mentioned task force. *Id.*

2. *Kyllo*, 121 S. Ct. at 2041. After a search warrant had been executed at Sam Shook’s house in Dalles, Oregon, the investigation focused on the triplex on Rhododendron as a suspected indoor marijuana grow operation. Brief for the U.S., *supra* note 1, at 3. Danny Kyllo lived in the middle house of the triplex, 878 Rhododendron Drive, and his sister, Lorie Kyllo, lived with Sam Shook’s daughter, Tova Shook, in one of the end houses in the triplex at 890 Rhododendron Drive. *Id.*

3. *Kyllo*, 121 S. Ct. at 2041. Thermal imaging was first developed and used by the military, but in 1980, it began to be used commercially. *See* Matt L. Greenberg, *Warrantless Thermal Imaging May Impermissibly Invade Home Privacy: United States v. Kyllo*, 140 F.3d 1249 (9th Cir. 1998), *withdrawn*, 184 F.3d 1059 (9th Cir. 1999), *superseded on rehearing by* 190 F.3d 1041 (9th Cir. 1999), 68 U. CIN. L. REV. 151, 155-57 (1999). Beginning in 1991, thermal imaging was used by law enforcement to detect suspected indoor marijuana growing operations. *Id.* at 157-58. Conducting a thermal scan at night is common practice to decrease “solar loading,” or “daytime solar energy accumulation by an object,” which may interfere with the effectiveness of the scan. *United States v. Kyllo*, 190 F.3d 1041, 1044 (9th Cir. 1999) [*Kyllo III*].

on a public street.⁴ Thermal imagers detect infrared radiation, which virtually all objects emit, but which is not visible without the aid of a device such as the Agema 210.⁵ A thermal imager operates much like a video camera in that it passively records the infrared radiation and converts the energy into images on a viewfinder based on relative temperature—black is cool, white is hot, and shades of gray indicate differences between the two ends of the spectrum.⁶

The results of the scans indicated that the roof over the garage and a side wall of Danny Kyllo's home were relatively hot compared to the rest of the home and substantially warmer than neighboring homes in the triplex.⁷ From these results, Agent Elliott concluded that Danny Kyllo was using halide lights to grow marijuana inside the house.⁸ Based on the results of the thermal scan, tips from informants, utility bills, and a previous arrest of Kyllo's wife Luanne for delivery of a controlled substance, Agent Elliott obtained a search warrant from a federal magistrate judge to search Danny Kyllo's home.⁹ Agents executed the warrant and found an indoor marijuana growing operation involving more than 100 plants in Kyllo's home.¹⁰ Kyllo was indicted on one count of manufacturing marijuana, in violation of 21 U.S.C. § 841(a)(1),¹¹ and

4. *Kyllo*, 121 S. Ct. at 2041.

5. *Id.* A thermal imager detects infrared light, or light that has very long wavelengths that cannot be seen by the eye. Greenberg, *supra* note 3, at 155.

6. *Kyllo*, 121 S. Ct. at 2041; *Kyllo*, 190 F.3d at 1044. A thermal imager does not detect temperature. *See* Greenberg, *supra* note 3, at 155-58. Heat, or thermal energy, is predominately radiated by infrared light, and the thermal imager detects variations in the wavelengths of the radiated infrared light. *Id.* These variations correspond to differences in temperature of the objects being viewed by the imager. *Id.*

7. *Kyllo*, 121 S. Ct. at 2041.

8. *Id.* Halide lights are high intensity lamps that simulate sunlight by using 400 - 1000 watt bulbs that generate heat of approximately 150 degrees. L. Matthew Springer, *A Far Cry From Katz: Deciding the Constitutionality of Prewarrant Thermal Imaging*, 25 OHIO N.U. L. REV. 593, 595 (1999).

9. *Kyllo*, 121 S. Ct. at 2041; *United States v. Kyllo*, 37 F.3d 526, 528-30 (9th Cir. 1994) [*Kyllo I*]. Judge Juba, United States Magistrate Judge for the District of Oregon, granted the search warrant because the electrical usage at Kyllo's residence was "consistently high," indicative of a marijuana growing operation, the results of the thermal scan indicated high heat in the residence indicative of lights used to grow marijuana, and the previous tips from informants. *See* *United States v. Kyllo*, 809 F. Supp. 787, 789-91 (D. Or. 1992). The warrant was also based on the fact that Kyllo's wife Luanne had previously been arrested for possession and delivery of a controlled substance. *Kyllo*, 37 F.3d at 529-30. The fact that Danny and Luanne Kyllo were separated at the time of the affidavit supporting the search warrant was included in the first appeal. *Kyllo*, 121 S. Ct. at 2041.

11. 21 U.S.C. § 841(a)(1) (1992) states: "[I]t shall be unlawful for any person knowingly or intentionally to manufacture, distribute, or dispense, or possess with intent to manufacture, distribute, or dispense, a controlled substance" 21 U.S.C. §

entered a conditional guilty plea after unsuccessfully moving to suppress the evidence seized from his home as an illegal search under the Fourth Amendment.¹² The court accepted the conditional guilty plea and sentenced Danny Kyllo to a prison term of 63 months.¹³

On appeal, the United States Court of Appeals for the Ninth Circuit remanded the case to the United States District Court of Oregon to conduct an evidentiary hearing on the intrusiveness of thermal imaging.¹⁴ On remand, the District Court found that the Agema 210 thermal imager "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," and that "[t]he device cannot and did not show any people or activity within the walls of the structure."¹⁵ The District Court held that the use of a thermal imager was not a search within the purview of the Fourth Amendment, and reaffirmed its denial of the motion to suppress.¹⁶ The case was appealed again to the Ninth Circuit.¹⁷ This time the

841(b)(1)(B)(vii) (1997) provides that an individual is subject to imprisonment and/or fines if found with "100 kilograms or more of a mixture or substance containing a detectable amount of marihuana, or 100 or more marihuana plants regardless of weight."

12. *Kyllo*, 121 S. Ct. at 2041. Judge Frye, United States District Court Judge for the District of Oregon, denied Kyllo's motion to suppress the evidence obtained in the search of his residence based on the Fourth Amendment's protection from unreasonable search and seizures. *United States v. Kyllo*, 809 F. Supp. 787, 793 (D. Or. 1992). The Fourth Amendment states: "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." U.S. CONST. amend IV. Normally "a guilty plea constitutes a waiver of all non-jurisdictional defects occurring prior to the plea. This waiver includes Fourth Amendment claims." *United States v. Cain*, 155 F.3d 840, 842 (7th Cir. 1998). However, under FED. R. CRIM. P. 11(a)(2), a defendant can enter a conditional guilty plea that reserves the right to appeal adverse pre-trial rulings. In this case, Mr. Kyllo entered a guilty plea on condition that he reserve his right to appeal the motion to suppress. *See United States v. Kyllo*, 190 F.3d 1041, 1044 (9th Cir. 1999).

13. *Kyllo*, 190 F.3d at 1044.

14. *United States v. Kyllo*, 37 F.3d 526, 531 (9th Cir. 1994). A panel in the Court of Appeals for the Ninth Circuit originally issued a memorandum opinion that remanded the case to the District Court of Oregon for a hearing on whether the affiant swearing out the affidavit for the search warrant recklessly omitted material information about Kyllo's marital status, and to determine the capabilities of the thermal imager. *United States v. Kyllo*, No. 93-30231, 1994 WL 259823, at *1 (9th Cir. June 14, 1994) (unpublished table decision); *United States v. Kyllo*, 26 F.3d 134 (9th Cir. 1994). However, this opinion was withdrawn and superseded by the *Kyllo I* opinion, which also vacated Kyllo's conviction before remanding. *See Kyllo*, 37 F.3d at 531.

15. *United States v. Kyllo*, No. 92-51-FR, 1996 U.S. Dist. LEXIS 3864, at *3-4 (D. Or. March 15, 1996).

16. *Id.* at 14.

17. *United States v. Kyllo*, 140 F.3d 1249 (9th Cir. 1998) [*Kyllo II*], *withdrawn by*

three-judge panel divided two to one and reversed the District Court, holding that the use of the thermal imager constituted an illegal search under the Fourth Amendment.¹⁸ The Ninth Circuit then remanded the case to the District Court of Oregon to determine if there was sufficient evidence for a search warrant without the thermal imaging data.¹⁹ However, the United States moved for a rehearing of the appeal and the Ninth Circuit Court of Appeals granted the motion.²⁰ Upon rehearing, a new panel affirmed the decision of the District Court of Oregon that thermal imaging did not constitute a search and withdrew the previous opinion.²¹

The Supreme Court of the United States granted certiorari and reversed the Ninth Circuit Court, holding: "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."²² The majority wanted to draw a line that is "not only firm, but also bright—which requires clear specification of those methods of surveillance that require a warrant."²³ However, the dissent argues that the new "bright-line" rule that the majority creates is "unnecessary, unwise, and inconsistent with the Fourth Amendment."²⁴

United States v. *Kyllo*, 184 F.3d 1059 (9th Cir. 1999), *superseded by* United States v. *Kyllo*, 190 F.3d 1041 (9th Cir. 1999).

18. *Kyllo*, 140 F.3d at 1255. The majority concluded that the use of a thermal imager constituted an illegal search under the Fourth Amendment because Mr. *Kyllo* had a "subjective expectation of privacy that activities conducted within his home would be private," *id.* at 1252, and that "the use of a thermal imager to observe heat emitted from various objects within the home infringes upon an expectation of privacy that society clearly deems reasonable." *Id.* at 1255.

19. *Id.*

20. See United States v. *Kyllo*, 184 F.3d 1059 (9th Cir. 1999). The original panel comprised of Judges Noonan, Hawkins, and Merhige, initially reversed the United States District Court Judge for the District of Oregon in a 2-1 split with Judge Hawkins dissenting. *Kyllo*, 140 F.3d at 1255. However, after Judge Merhige, the author of the *Kyllo II* opinion, resigned for health reasons while the United States' motion for rehearing was pending, the new Judge assigned to the panel, Judge Brunetti, agreed with Judge Hawkins to rehear the appeal without any additional argument. See Brief for Petitioner at 8, *Kyllo v. United States*, 121 S. Ct. 2038 (2001) (No. 99-8508) [hereinafter *Petitioner's Brief*].

21. United States v. *Kyllo*, 190 F.3d 1041, 1047 (9th Cir. 1999). Judges Hawkins and Brunetti agreed on the issues and formed a new majority that affirmed the District Court Judge's decision, with Judge Noonan now as the only dissenter. See *Petitioner's Brief*, *supra* note 20, at 8-9.

22. *Kyllo v. United States*, 121 S. Ct. 2038, 2046 (2001). See *infra* text accompanying notes 121-36.

23. *Kyllo*, 121 S. Ct. at 2046. See *infra* text accompanying note 125.

24. *Kyllo*, 121 S. Ct. at 2047 (Stevens, J., dissenting). See *infra* text accompanying notes 137-53.

The purpose of this case note is to examine the new “bright-line” rule that the Court adopts, and explain how it is not a bright line since it cannot be interpreted by the lower courts.²⁵ This rule more closely resembles fuzzy shades of gray because the Court does not define the contours of the line. The new rule the Court has adopted is important because it will determine when the use of technology constitutes a search under the Fourth Amendment. As technology advances at a rapid pace, questions like these will only become more prevalent in Wyoming, the Tenth Circuit, and around the country. This note will first briefly discuss the history of the Fourth Amendment and how search and seizure law developed in early America until *United States v. Katz*. It will then discuss thermal imaging questions that utilized the *Katz* test prior to the new rule in *Kyllo*. The analysis section begins by discussing the “general public use” standard used by the majority, especially the lack of a definition on what constitutes “general public use.” The analysis will then shift to the “details of the home” language as used by the Court, and discuss the lack of a definition concerning what constitutes a “detail of the home.” This note concludes that the rule adopted by the majority must be further refined or completely changed if a functional standard is to be established.

BACKGROUND

A Brief History of Search and Seizure

The notion that a person has a right to be secure from unreason-

25. The purpose of this case note is not to argue whether the use of thermal imaging devices is constitutional, and therefore whether the ultimate conclusion of the Court is right or wrong. Many case notes and/or comments have focused on the subject of the constitutionality of thermal imaging, all concentrating on the previous two-prong test announced in *Katz v. United States*, 389 U.S. 347 (1967). See, e.g., Jeffrey P. Campisi, *The Fourth Amendment and New Technologies: The Constitutionality of Thermal Imaging*, 46 VILL. L. REV. 241 (2001); Aaron Larks-Stanford, *The Warrantless Use of Thermal Imaging and “Intimate Details”*: *Why Growing Pot Indoors and Washing Dishes are Similar Activities Under the Fourth Amendment*, 49 CATH. L. REV. 575 (2000); Kathleen A. Lomas, *Bad Physics and Bad Law: A Review of the Constitutionality of Thermal Imagery After United States v. Elkins*, 34 U.S.F. L. REV. 799 (2000); Springer, *supra* note 8; Douglas A. Kash, *Prewarrant Thermal Imaging as a Fourth Amendment Violation: A Supreme Court Question in the Making*, 60 ALB. L. REV. 1295 (1997); James Francis Barna, *Reforming the Katz Fourth Amendment “Reasonable Expectation of Privacy” Test: The Case of Infrared Surveillance of Homes*, 49 WASH. U.J. URB. & CONTEMP. L. 247 (1996); Mindy G. Wilson, *The Prewarrant Use of Thermal Imagery: Has This Technological Advance in the War Against Drugs Come at the Expense of Fourth Amendment Protections Against Unreasonable Searches*, 83 KY. L.J. 891 (1995); Tracy M. White, *The Heat is On: The Warrantless Use of Infrared Surveillance to Detect Indoor Marijuana Cultivation*, 27 ARIZ. ST. L.J. 295 (1995).

able searches, especially in the home, is deeply rooted in history.²⁶ Although British policies assaulted “the privacy of dwellings and places of business, particularly when royal revenues were at stake . . . [t]he Fourth Amendment would not have been possible but for British legal theory.”²⁷ The modern approach to a person’s protection from unlawful searches comes from a coupling of the Magna Carta, and the “appealing fiction that a man’s home is his castle.”²⁸ William Pitt argued this principle in a speech to Parliament in 1763, when he stated:

The poorest man may, in his cottage, bid defiance to all the forces of the crown. It may be frail; its roof may shake; the wind may blow through it; the storm may enter; the rain may enter; but the King of England may not enter; all his force dares not cross the threshold of the ruined tenement.²⁹

Although Parliament would not adopt legislation to protect its citizens from unreasonable searches, it was this mindset and British searches of colonist homes that provoked Massachusetts to enact new legislation in 1756, in favor of warrants founded on some elements of

26. See generally Brief of Amicus Curiae The Liberty Project at 2-9, *Kyllo v. United States*, 121 S. Ct. 2038 (2001) (No. 99-8508) (explaining that special protections from searches date back to ancient times, and continue through British law and the founding of the United States).

27. LEONARD W. LEVY, ORIGINAL INTENT AND THE FRAMERS’ CONSTITUTION 221-22 (Collier Macmillan 1988). British tax collectors would often enforce tax measures by “general searches,” that did not have to establish details such as persons, places, or things to be searched. *Id.* at 221. The British also performed general searches in colonial America, which caused strained relations between England and the colonies. *Id.* The issue of taxation without representation, then collection in this manner, helped cause the Revolution. *Id.* at 222.

28. *Id.* (citing William Cuddihy, *The Fourth Amendment: Origins and Original Meanings* (1990) (unpublished Ph.D. dissertation, Claremont Graduate University) (on file with the Claremont Graduate University Library) (manuscript in progress when cited in Levy’s work)). Cuddihy cites a 1505 opinion of Chief Justice John Fineux in a King’s Bench case reported in the year books that uses the phrase “a man’s home is his castle.” *Id.* at introduction. It is believed that Robert Beale, clerk to the Privy Council in 1589, was the first person to connect the privacy of one’s home to the Magna Carta. LEONARD W. LEVY, ORIGINS OF THE FIFTH AMENDMENT 170-71 (New York: Oxford University Press 1968). He asked the Council what had happened to chapter 39 of the Magna Carta when agents of the court could “enter into men’s houses, break up their chests and chambers,” and carry off whatever they pleased. *Id.*

29. NELSON B. LASSON, THE HISTORY AND DEVELOPMENT OF THE FOURTH AMENDMENT TO THE UNITED STATES CONSTITUTION 49-50 (Johns Hopkins University Press 1937). William Pitt connected the Magna Carta to a right of protection from search and seizures, even though the charter never specifically stated this. See LEVY, *supra* note 27, at 222.

particularity.³⁰ Other states soon followed suit, and in 1776, Virginia, Pennsylvania, and Delaware all adopted legislation similar to that of Massachusetts,³¹ followed by New Hampshire in 1784.³²

Richard Henry Lee of Virginia used the Massachusetts Declaration as a model to draft a bill of rights containing protection from unreasonable search and seizure for the United States Constitution.³³ James Madison, also from Virginia, led the fight against Lee's proposal, but other anti-Federalists were soon demanding a search and seizure provision.³⁴ As the ratification process for the new United States Constitution moved forward, states, led by Virginia, ratified the Constitution, but with a recommendation for a search and seizure provision.³⁵ Struggling to overcome apathy in his own party and opposition from the anti-

30. See LEVY, *supra* note 27, at 224-25. Article 14 of the Massachusetts Declaration of Rights stated:

Every subject has a right to be secure from all unreasonable searches, and seizures of his person, his houses, his papers, and all his possessions. All warrants, therefore, are contrary to this right, if the cause or foundation of them be not previously supported by oath or affirmation; and if the order in the warrant to the civil officer, to make search in suspected places, to arrest one or more suspected persons, or to seize their property, be not accompanied with a special designation of the persons or objects of search, arrest, or seizure: and no warrant ought be issued but in cases and with the formalities, prescribed by the laws.

Id. at 239. This Declaration of Rights and Massachusetts' Constitution were finally adopted in 1780. *Id.* at 238. For the complete Massachusetts Declaration, see BERNARD SCHWARTZ, 1 THE BILL OF RIGHTS: A DOCUMENTARY HISTORY 340-44 (New York: Chelsea House 1971).

31. See LEVY, *supra* note 27, at 236-38. Virginia's Declaration of Rights used weaker language, stating that "general warrants . . . ought not to be granted." *Id.* at 236 (emphasis added). Pennsylvania's Declaration went a bit further, stating, "the people have a *right* to hold themselves, their houses, papers, and possessions free from search and seizure," but continued to use the language that general warrants "ought not to be granted." *Id.* at 237 (emphasis added). Delaware's Declaration did not use the language that freedom from unreasonable search and seizures was a 'right,' but they were the first to declare unspecific searches "illegal." *Id.* at 238.

32. *Id.* New Hampshire copied the Massachusetts Declaration. *Id.*

33. *Id.* at 241. Richard Henry Lee was genuinely afraid of a national government, and sought to wreck the ratification process by proposing a Bill of Rights. *Id.* He could not decide on language of his own so he basically copied the Massachusetts Declaration, but made it more broad, stating: "[T]he Citizens *shall not* be exposed to unreasonable searches, seizures of their papers, houses, persons, or property." *Id.* (emphasis added). For the text of the Massachusetts Declaration, see *supra* note 30.

34. See LEVY, *supra* note 27, at 241.

35. *Id.* at 242. After Virginia added the search and seizure provision, North Carolina, New York, and Rhode Island, all ratified the Constitution with the same recommendation for a search and seizure provision. *Id.*

Federalists, Madison proposed a search and seizure amendment.³⁶ A House committee of eleven members revised Madison's proposal, most significantly dividing the amendment into two parts using a semicolon, which was adopted as the final draft of the Fourth Amendment of the United States Constitution in 1791.³⁷

Early United States Common Law

Early cases in the United States involving questions of whether an illegal search and seizure had taken place utilized a physical invasion test. Courts first seemed to shy away from a physical invasion requirement by proclaiming: "It is not the breaking of his doors, and the rummaging of his drawers, that constitute the essence of the offence; but it is the invasion of his indefeasible right of personal security, personal liberty and private property"³⁸ However, the advance of technology made the question of whether or not an illegal search had actually taken place more difficult because the government could use new technology to observe things they previously could not have observed from a place they were legally entitled to be. During the era of prohibition, the government suspected several conspirators of importing, possessing, and selling liquor unlawfully.³⁹ Olmstead, one of the conspirators, used a recent technological development, telephones, to communicate with suppliers and buyers.⁴⁰ The government would intercept the telephone communications by inserting wires into the existing telephone lines, which enabled the government to listen to the telephone conversations.⁴¹

36. *Id.* Madison recommended:

The rights of the people to be secured in their persons; their houses, their papers, and their other property, from all unreasonable searches and seizures, shall not be violated by warrants issued without probable cause, supported by oath or affirmation, or not particularly describing the places to be searched, or the persons or things to be seized.

BERNARD SCHWARTZ, 2 THE BILL OF RIGHTS: A DOCUMENTARY HISTORY 1027 (New York: Chelsea House 1971).

37. See LEVY, *supra* note 27, at 243-46. For the adopted text of the Fourth Amendment, see *supra* note 12.

38. *Boyd v. United States*, 116 U.S. 616, 630 (1886).

39. *Olmstead v. United States*, 277 U.S. 438, 455-56 (1928). Olmstead was the leading conspirator and general manager of the illegal liquor business. *Id.* at 456. Olmstead received half the profits, having made a capital contribution of \$10,000, while eleven others divided the other half, having contributed \$1,000 each. *Id.* Sales would top \$176,000 in a bad month, with total sales exceeding two million dollars a year. *Id.*

40. *Id.* At the largest office in Seattle, the conspirators had three telephone lines, lines in homes, and lines at other places throughout the city. *Id.*

41. *Id.* at 457. The conspirators frequently communicated by telephone with Van-

After being convicted, the defendants appealed, claiming that the wire-tapping of telephones constituted an illegal search under the Fourth Amendment.⁴² The United States Supreme Court held that because telephones were designed to project a voice to those outside, those who install telephones could not reasonably expect to be protected by the Fourth Amendment from wire-tapping.⁴³ The Court concluded that unless there was an "actual physical invasion of his house 'or curtilage,'" there could be no Fourth Amendment violation.⁴⁴ Thus, the physical invasion test of the Fourth Amendment was created.

The "actual physical invasion" test used by the Court endured even after wire-tapping was made unlawful by statute.⁴⁵ In *Goldman v. United States*, federal agents used a detectaphone to listen to conversations between defendants conspiring to violate bankruptcy laws.⁴⁶ Although the agents overheard telephone conversations, the Court found that no actual physical invasion had taken place; thus, there was no Fourth Amendment violation.⁴⁷ In *Silverman v. United States*, police used a "spike mike" to listen to conversations by the defendants related to illegal gambling.⁴⁸ The Court applied the physical invasion test in this

cover, British Columbia, to arrange deliveries, and orders of up to 200 cases a day were received via telephone. *Id.* at 456. The wire-tapping was done in the basement of the office building or in the streets without trespassing on the defendants' property. *Id.* at 457.

42. *Id.* The defendants were convicted of unlawfully possessing, transporting, and importing intoxicating liquors, and maintaining nuisances by selling intoxicating liquors, in violation of the National Prohibition Act. *Id.* at 455. The defendants employed no fewer than fifty persons, two seagoing vessels, smaller coastwise vessels, a ranch beyond the suburban limits of Seattle with a large underground cache for storage, a number of smaller caches in the city, and a central office with operators, executives, salesmen, deliverymen, dispatchers, scouts, bookkeepers, collectors, and an attorney. *Id.* at 456.

43. *Id.* at 466.

44. *Id.* For the definition of "curtilage," see *infra* note 57.

45. Wire-tapping was made unlawful by statute in 1934. See Federal Communications Act, Act of June 19, 1934, 48 Stat. 1064, 1103; 47 U.S.C. § 605.

46. 316 U.S. 129, 130-32 (1942). A detectaphone is a device that amplifies sound waves from a different room when placed against an adjoining wall. *Id.* at 131. The sound from the adjoining room can then be heard through earphones. *Id.* The appellants were lawyers convicted of violating section 29(b)(5) of the Bankruptcy Act by receiving, or attempting to obtain, money for acting, or forbearing to act, in a bankruptcy proceeding. *Id.* at 130.

47. *Id.* at 134-35. The Court found that listening to a telephone conversation with a detectaphone did not violate 47 U.S.C. § 605 since this was not a "communication" or "interception" as defined by 47 U.S.C. § 153, which would require an actual wiretap. *Id.* at 133-34.

48. 365 U.S. 505, 506 (1961). A "spike mike" is a foot long spike attached to a microphone with an amplifier, power pack, and earphones. *Id.* It is inserted into walls

case, and found that because the “spike mike” physically penetrated the wall and intruded into a constitutionally protected area, the use of a “spike mike” constituted an unreasonable search under the Fourth Amendment absent a warrant.⁴⁹ However, the language of the opinion, and the concurrences, indicate that the Court was considering moving away from the physical invasion test when deciding Fourth Amendment issues.⁵⁰

The Court made a momentous deviation from precedent when it overruled the physical invasion test in *Katz v. United States* because “the Fourth Amendment protects people, not places.”⁵¹ In *Katz*, the FBI listened to the appellant’s conversations in a phone booth using a device similar to the detectaphone used in *Goldman*.⁵² The Court found the use of the device to be a search since what a person “seeks to keep private, even in an area accessible to the public, may be constitutionally protected.”⁵³ Justice Harlan, in his concurring opinion, formulated a two-prong test for deciding when an unreasonable search had taken place.⁵⁴ First, a person must “have exhibited an actual (subjective) expectation of

and uses things such as heating ducts, plumbing, or other objects inside the wall that conduct sound. *Id.* at 506-07. A “spike mike” can hear conversations taking place in far away areas of a home or office. *Id.*

49. *Id.* at 509, 512. Although the appellants wanted the Court to reexamine and overrule the *Goldman* case, the Court found no need to go beyond *Goldman* even a “fraction of an inch” in making their decision. *Id.* at 512.

50. *Id.* at 512-13. Justice Douglas concurred in the judgment, but would have done away with the physical invasion requirement because “[t]he depth of penetration . . . is not the measure of the injury.” *Id.* at 513 (Douglas, J., concurring). Justices Clark and Whittaker stated that they felt “obliged to join the Court’s opinion” since there was “sufficient trespass to remove this case from the coverage of earlier decisions.” *Id.* at 513 (Clark, Whittaker, J.J., concurring).

51. 389 U.S. 347, 351 (1967). The lower court had ruled the evidence was admissible because there was no “physical entrance into the area occupied by the petitioner.” *Id.* at 349.

52. *Id.* at 348. Mr. Katz was convicted using evidence obtained by attaching an electronic listening device to the outside of a telephone booth he used frequently. *Id.* For the description of a detectaphone, see *supra* note 46 and accompanying text.

53. *Id.* at 351. See also *Rios v. United States*, 364 U.S. 253 (1960). The appellant in *Rios* was seen by police officers getting into a cab in a neighborhood that had a reputation for “narcotics activity.” *Id.* at 256. The police subsequently pulled the cab over and found narcotics in the possession of the appellant. *Id.* The Court held that the Fourth Amendment protected the appellant even while in a taxi. *Id.* at 261-62.

54. *Katz*, 389 U.S. at 361 (Harlan, J., concurring). Although other Justices did not join Justice Harlan’s concurring opinion, future courts have adopted this test in determining when an illegal search has taken place. *E.g.*, *Kyllo v. U.S.*, 121 S. Ct. 2038, 2042 (2001); *California v. Ciraolo*, 476 U.S. 207, 211 (1986); *Smith v. Maryland*, 442 U.S. 735, 740 (1979).

privacy.”⁵⁵ Second, the expectation must “be one that society is prepared to recognize as ‘reasonable.’”⁵⁶ Although this new rule reversed the precedent of a “physical invasion” requirement, the Court continued to recognize the common-law concept of “curtilage,” as well as the doctrine of “open fields.”⁵⁷ Using the new rule from *Katz*, derived from a one-justice concurring opinion,⁵⁸ the courts began deciding cases involving developing technology.

Technology Puts Katz to the Test

The first cases utilizing the *Katz* test involved technology that had been around for many years, but had barely begun to be used by the police. Binoculars and telescopes could be used to look into windows and other openings from a place where police had the right to be. Using the *Katz* analysis, the courts held that this use of technology did not constitute a search.⁵⁹ As technology advanced, the police began to use bin-

55. *Katz*, 389 U.S. at 361 (Harlan, J., concurring). For instance, Justice Harlan states that a person would demonstrate an expectation of privacy by walking into a phone booth and shutting the door. *Id.* (Harlan, J., concurring). The phone booth is accessible to the public at most times, but when the door is shut it temporarily becomes private and the person inside the phone booth expects that his conversations will not be overheard. He has taken measures, by shutting the door, to ensure this fact. *Id.* (Harlan, J., concurring).

56. *Id.* (Harlan, J., concurring). For instance, Justice Harlan states that the expectation of freedom from intrusion, and privacy, in a phone booth is reasonable, but conversations out in the open would not be protected because an expectation of privacy in a public place would be unreasonable. *Id.* (Harlan, J., concurring).

57. Curtilage is a common-law concept defined as: “A small court, yard, garth, or piece of ground attached to a dwelling-house, and forming one enclosure with it, or so regarded by the law; the area attached to and containing a dwelling-house and its out-buildings.” OXFORD ENGLISH DICTIONARY 1278 (1933). See *Oliver v. United States*, 466 U.S. 170, 184 (1984) (explaining the open fields doctrine). The doctrine of “open fields,” the area of land that is not within the curtilage, was first enunciated in *Hester v. United States*, 265 U.S. 57, 59 (1924), and was reaffirmed after *Katz* in *Oliver v. United States*, 466 U.S. at 184. This doctrine allows police to search an area outside the curtilage without a search warrant, even if the land is private property and has no trespassing signs posted. *Id.* at 183-84.

58. See *supra* notes 54-56.

59. See, e.g., *People v. Ferguson*, 365 N.E.2d 77 (Ill. App. Ct. 1977) (holding that the use of binoculars to look through a second floor apartment window was not a search, because no expectation of privacy is exhibited when window curtains are open); *United States v. Minton*, 488 F.2d 37 (4th Cir. 1973) (holding that the use of binoculars was not a search); *United States v. Grimes*, 426 F.2d 706 (5th Cir. 1970) (holding the same); *Fullbright v. United States*, 392 F.2d 432 (10th Cir. 1968), *cert. denied* 393 U.S. 830 (1968) (holding the same); *State v. Littleton*, 407 So.2d 1208 (La. 1981) (holding that the use of binoculars to look into hangar not a search, expectation of privacy in hangar with open door unreasonable). But see *United States v. Taborda*, 635 F.2d 131 (2d Cir. 1980) (holding that the extended surveillance of a residence using telescope is a search);

oculars equipped with night vision, giving officers the ability to see in the dark. The courts again used the *Katz* test to determine that a search had not taken place.⁶⁰ The police also used flashlights to illuminate dark areas of automobiles and basements, and the courts did not consider the use of a flashlight a search.⁶¹

Authorities soon utilized other recent technologies, such as tracking devices, to help combat crime.⁶² Agents would install "beepers" that would emit a signal that could be tracked and located.⁶³ Agents in *United States v. Knotts* installed a beeper in a container of chloroform and followed the beeper signal from where the defendants had picked up the container to a remote cabin.⁶⁴ Once the container arrived at the cabin, the beeper was not used to monitor the container while inside.⁶⁵ The Court found that the beeper had been monitored while on public streets, and thus no search had resulted because there could be no legitimate expectation of privacy on public streets.⁶⁶ However, in *United States v. Karo*, a beeper signal was used to determine if a container with the beeper was still in a house.⁶⁷ The Court determined that monitoring the beeper while it was inside revealed "a critical fact about the interior of the premises that the government is extremely interested in knowing and

State v. Ward, 617 P.2d 568 (Haw. 1980) (holding that extended surveillance with binoculars was a search).

60. *People v. Hicks*, 364 N.E.2d 440 (Ill. App. Ct. 1977) (holding that the use of night binoculars to look into first floor window in hotel not a search, no exhibited expectation of privacy when window curtains left open). *But see* Commonwealth v. Williams, 431 A.2d 964 (Pa. 1981) (explaining that the use of night vision to observe apartment for nine days constitutes a search).

61. *See, e.g., Texas v. Brown*, 460 U.S. 730, 740 (1983) ("The use of a searchlight is comparable to the use of a marine glass or field glass. It is not prohibited by the Constitution.") (quoting *United States v. Lee*, 274 U.S. 559, 563 (1927)); *State v. Crea*, 233 N.W.2d 736 (Minn. 1975) (shining flashlight in basement window when police have authority to be on curtilage is not a search).

62. *United States v. Knotts*, 460 U.S. 276 (1983).

63. *Id.* at 277.

64. *Id.* at 278. Agents initially followed the defendant's vehicle using visual surveillance, but subsequently lost the vehicle and the beeper signal. *Id.* A helicopter picked up the signal one hour later when it was stationary at the cabin. *Id.*

65. *Id.* at 278-79. The Court stated that the record did not reveal that the beeper was used after the location of the cabin had initially been determined. *Id.*

66. *Id.* at 285. The Court stated that a "scientific enhancement of this sort raises no constitutional issues which visual surveillance would not also raise," and that "there is no indication that the beeper was used in any way to reveal information as to the movement of the drum within the cabin." *Id.*

67. 468 U.S. 705, 708-10 (1984). Federal agents used the beeper to ensure that the container was still in the defendant's house. *Id.* at 708. The container was moved undetected several times, and each time the beeper was used to find the container again. *Id.* at 709-10.

that it could not have otherwise obtained without a warrant.”⁶⁸ The Court, applying the *Katz* test, reasoned: “[P]rivate residences are places in which the individual normally expects privacy free of governmental intrusion not authorized by a warrant, and that expectation is plainly one that society is prepared to recognize as justifiable.”⁶⁹

In 1986, two cases decided by the Court concerning the government’s use of aerial observation were decided using the *Katz* analysis. In the first case, police had used an airplane to fly over the residence of a suspected marijuana grower at 1000 feet and photographed marijuana plants in the fenced back yard with a 35mm camera.⁷⁰ *Katz* had previously held that “[w]hat a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection.”⁷¹ The Court used this language to determine that since police had the right to travel “public airways,” and they do not have to “shield their eyes” when passing by a home on public thoroughfares, an expectation of privacy for an uncovered yard was unreasonable.⁷² Using the same reasoning, the Court also decided, in an unrelated second case, that using a “precision aerial mapping camera” to take photographs of a chemical manufacturing plant did not constitute a search.⁷³ However, *Dow Chemical Co. v. United States* did raise the question of whether using “highly sophisticated surveillance equipment not generally available to the public, such as satellite technology [would be] . . . constitutionally proscribed absent a warrant.”⁷⁴ This was the first mention of a “general pub-

68. *Id.* at 715. The Court made it clear that technology itself would not violate the Fourth Amendment, but that “[i]t is the exploitation of technological advances that implicate the Fourth Amendment, not their mere existence.” *Id.* at 712.

69. *Id.* at 714. *Accord* *Welsh v. Wisconsin*, 466 U.S. 740, 748-49 (1984); *Steagald v. United States*, 451 U.S. 204, 211-12 (1981); *Payton v. New York*, 445 U.S. 573, 586 (1980).

70. *California v. Ciraolo*, 476 U.S. 207, 209 (1986).

71. *Katz v. United States*, 389 U.S. 347, 351 (1967).

72. *Ciraolo*, 476 U.S. at 213-15. The Court held that an expectation of privacy from naked eye police surveillance in an aircraft at 1000 feet was unreasonable since air travel was “routine.” *Id.* at 215.

73. *Dow Chemical Co. v. United States*, 476 U.S. 227, 239 (1986). The Environmental Protection Agency (EPA) took pictures of Dow Chemical’s 2000-acre manufacturing plant from 12,000, 3000, and 1200 feet without Dow’s permission or knowledge. *Id.* at 229. Dow sued the EPA to enjoin the practice as an illegal search. *Id.* at 230. Even though Dow employed heavy security at ground level, the Court held that the open areas of the plant were not “curtilage;” rather, they were more analogous to an “open field” not protected under the Fourth Amendment. *Id.* at 239. For a discussion of the open fields doctrine, see *supra* note 57.

74. *Dow Chemical*, 476 U.S. at 238. *Dow Chemical* is the first Court to mention a standard of “general public use” as adopted by the majority in *Kyllo*. *Id.* However, the *Dow Chemical* court did not discuss or adopt this standard. They did not discuss general public use because the mapping camera did not reveal “intimate details;” *id.*, however,

lic use" standard by the Court.

A similar question concerning the use of aerial technology was raised when police used a helicopter to fly 400 feet over a greenhouse that was missing part of its roof.⁷⁵ The police found that the greenhouse was being used to grow marijuana.⁷⁶ The Court reasoned: "Any member of the public could legally have been flying over Riley's property in a helicopter at the altitude of 400 feet and could have observed Riley's greenhouse. The police officer did no more."⁷⁷ The Court stated that because "private and commercial flight by helicopter in the public airways is routine . . . Riley [the defendant] could not reasonably have expected that his greenhouse was protected from public or official observation."⁷⁸ Although the question of "general public use" was not specifically addressed in the plurality opinion, it did go to some length to point out that the helicopter was widely used at that time.⁷⁹ Justice O'Connor's concurring opinion, however, suggested that because there is "considerable use" of both the altitude of 400 feet and helicopters by the public, it would be the defendant's burden to introduce evidence to the contrary.⁸⁰

Katz and the Use of Thermal Imaging Devices

Thermal imaging technology began to be widely used by law enforcement to detect drug cultivation operations in the early nineties.⁸¹

the Court gave no guidance as to what constitutes an intimate detail.

75. *Florida v. Riley*, 488 U.S. 445, 447-48 (1989) (plurality opinion).

76. *Id.* at 448.

77. *Id.* at 451.

78. *Id.* at 450-51 (quoting *California v. Ciraolo*, 476 U.S. 207, 215 (1986)). Although the Court's opinion was a plurality opinion, Justice O'Connor's concurring opinion agreed that the expectation of privacy was not a reasonable one. *Id.* at 452 (O'Connor, J., concurring).

79. *Id.* at 451 (stating that police have used helicopters since 1947, there are over 10,000 helicopters registered in the United States today, and over 31,697 helicopter pilots). It appears that the general public use standard, although not adopted as a rule, was used as one reason to establish that there could be no reasonable expectation of privacy when applying the *Katz* test to this technology because air transportation is "routine." *Id.* at 450-51. See *supra* notes 72, 78 and accompanying text.

80. *Riley*, 488 U.S. at 455 (O'Connor, J., concurring). Justice O'Connor is the first to argue that general public use is dispositive to the issue of expectations of privacy and suggests a burden-shifting rule. *Id.* Justice O'Connor writes:

Because there is reason to believe that there is considerable use of airspace at altitudes of 400 feet and above, and because Riley introduced no evidence to the contrary before the Florida courts, I conclude that Riley's expectation that his curtilage was protected from naked-eye aerial observation from that altitude was not a reasonable one.

Id.

81. See *White*, *supra* note 25, at 295-96.

Early cases involving the constitutionality of thermal imaging devices were often issues of first impression, and thus courts tried to deal with the issues without actually ruling on the constitutionality of thermal imaging itself.⁸² Courts would often consider the evidence or affidavit in support of a search warrant without the thermal imaging data and usually found that there was enough evidence to support the warrant without thermal imaging.⁸³ Other search warrants contained thermal imaging data, but the constitutionality of thermal imaging was not challenged.⁸⁴ However, courts could not avoid deciding this issue for long and were soon delving into the Fourth Amendment questions raised by this new technology.

The United States Court of Appeals for the Eighth Circuit was the first to rule on the warrantless use of thermal imaging devices.⁸⁵ The court reasoned that warrantless thermal imaging did not constitute a search because it did no more than detect "differences in the temperature on the surface of the objects being observed."⁸⁶ The court, using the *Katz* test, held that even if the defendants could show an expectation of privacy, that expectation would not be one that society would accept as reasonable for two reasons.⁸⁷ First, the court compared the "waste heat" leaving the surface of a house to waste left at the curb.⁸⁸ The United States Supreme Court had previously held that waste left at the curb was not protected from a warrantless search by police.⁸⁹ Second, the court

82. See *infra* notes 83-84.

83. See, e.g., *United States v. Casanova*, 835 F. Supp. 702, 708 (N.D.N.Y. 1993) (holding that the totality of circumstances justifies the issuance of a warrant without the thermal imaging information); *United States v. Deaner*, 1 F.3d 192, 197 (3rd Cir. 1993) (finding that the affidavit establishes probable cause without thermal imaging evidence). *Accord* *United States v. Olson*, 21 F.3d 847, 850 (8th Cir. 1994); *United States v. Feeney*, 984 F.2d 1053, 1056 (9th Cir. 1993). See *infra* notes 100, 105, 110-16 and accompanying text.

84. E.g., *United States v. Mooring*, 137 F.3d 595 (8th Cir. 1998); *United States v. Zimmer*, 14 F.3d 286 (6th Cir. 1994); *United States v. Broussard*, 987 F.2d 215 (5th Cir. 1993).

85. *United States v. Pinson*, 24 F.3d 1056 (8th Cir. 1994). In *Pinson*, the Drug Enforcement Agency (DEA) used a thermal imager to observe the residence of Pinson, a suspected indoor drug cultivator. *Id.* at 1057.

86. *Id.* at 1058 (citing *United States v. Penny-Feeney*, 773 F. Supp. 220, 225-26 (D. Haw. 1991), *aff'd* on other grounds *sub nom.* *United States v. Feeney*, 984 F.2d 1053 (9th Cir. 1993)).

87. *Id.* at 1058-59.

88. *Id.* The court adopted the "heat waste" analogy from the *Penny-Feeney* United States District Court case that proclaimed there could be no subjective expectation of privacy in heat escaping the house since the "waste heat" is "abandoned" into the public sphere, just like waste left at the curb. *Id.* at 1058. See *supra* note 86, and *infra* note 89.

89. *California v. Greenwood*, 486 U.S. 35, 39-41 (1988). The Court applied the *Katz* test and determined that society would not accept as reasonable an expectation of pri-

compared infrared surveillance to the use of dogs trained to sniff and identify the presence of drugs, which had also previously been held not to be a search by the Supreme Court.⁹⁰ The court in *United States v. Pinson* held that because there can be no reasonable expectation of privacy in heat emanating from the home, the use of a thermal imager did not constitute a search.⁹¹

The United States Court of Appeals for the Fifth Circuit was the next to take up the issue of thermal imaging, and held that the use of a thermal imager did not require a warrant, but for different reasons.⁹² *United States v. Ishmael* rejected the "heat waste" analogy since the "law of physics" and not the "deliberate act" of the defendant was responsible for the emission of heat.⁹³ The *Ishmael* court found that the defendant did have an expectation of privacy in heat escaping his home, but held that thermal imaging was lawful because it did not reveal any "intimate details."⁹⁴ The court also reasoned that because the thermal imaging de-

vacy for trash left in opaque bags at the curb, an area accessible to the public. *Id.*

90. *Pinson*, 24 F.3d at 1058. In *United States v. Place*, 462 U.S. 696, 707 (1983), the Court held that the use of nonintrusive equipment, such as police-trained dogs does not constitute a search for the purposes of the Fourth Amendment since the "canine sniff is *sui generis*." "We are aware of no other investigative procedure that is so limited both in the manner in which the information is obtained and in the content of the information revealed by the procedure." *Id.* The *Pinson* court found that "[j]ust as odor escapes a compartment or building and is detected by the sense-enhancing instrument of a canine sniff, so also does heat escape a home and is detected by the sense-enhancing infrared camera." *Pinson*, 24 F.3d at 1058.

91. *Pinson*, 24 F.3d at 1058-59.

92. *United States v. Ishmael*, 48 F.3d 850, 857 (5th Cir. 1995). In *Ishmael*, a DEA agent suspected the appellants were growing marijuana illegally on their property and used a thermal imager as part of the investigation before obtaining a search warrant. *Id.* at 851-52. When the warrant was executed, a large indoor marijuana grow operation was found. *Id.*

93. *Id.* at 854. The court concluded that unless they were to render the first prong of the *Katz* test meaningless, they had to conclude that the appellants exhibited a subjective expectation of privacy by maintaining a hidden "hydroponic laboratory." *Id.* It cited *Ciraolo* where the defendant had a six-foot outer fence and a ten-foot inner fence and the Court concluded the defendant had exhibited a subjective expectation of privacy, but that the expectation was "unreasonable." *Id.* (citing *California v. Ciraolo*, 476 U.S. 207, 211 (1986)). See *supra* notes 70-72 and accompanying text.

94. *Ishmael*, 48 F.3d at 855 (citing *Dow Chemical Co. v. United States*, 476 U.S. 227, 238 (1986) (stating that photographs do not reveal such intimate details as to raise a constitutional concern)). The *Ishmael* court derived its "intimate details" standard from the opinion in *Dow Chemical*. *Id.* Like the *Dow Chemical* Court, the *Ishmael* court does not provide a definition of what constitutes an "intimate detail." See *supra* note 74. However, it appears that the court considers an intimate detail as something that is observed through the walls of a building, such as a conversation inside the building as indicated in *Dow Chemical*, 476 U.S. at 238, movements inside a cabin such as in *United States v. Knotts*, 460 U.S. 276, 285 (1983), or information that may involve

vice was "passive and non-intrusive," the sanctity of the home was not disturbed.⁹⁵ Other Circuits built upon the reasoning of *Pinson* and *Ishmael*, holding that the warrantless use of thermal imaging devices is constitutional.⁹⁶ The Tenth Circuit soon became the first circuit to decide that the warrantless use of a thermal imager was unconstitutional.⁹⁷

The Tenth Circuit and Thermal Imaging

In the United States District Court for the District of Wyoming, Judge Clarence A. Brimmer considered a motion to suppress evidence acquired pursuant to a search warrant because the warrant was obtained using thermal imaging results.⁹⁸ Agents of the Wyoming Division of Criminal Investigation (DCI), suspecting Cusumano (the defendant) was growing marijuana in his residence, "used a thermal imager to detect inordinate heat loss from the defendants' residence that was consistent with an indoor marijuana grow operation."⁹⁹ A search warrant was obtained and the subsequent search revealed an indoor marijuana growing operation.¹⁰⁰ Judge Brimmer, using the Katz test, found that it was

"embarrassment or inconvenience." *Ishmael*, 48 F.3d at 855.

95. *Ishmael*, 48 F.3d at 857. A passive, non-intrusive, device is one that "does not send any beams or rays into the area on which it is fixed or in any way penetrate structures within that area." *Id.* at 856 (quoting *United States v. Penny-Feeney*, 773 F. Supp. 220, 223 (D. Haw. 1991)). See *supra* note 86.

96. See *United States v. Robinson*, 62 F.3d 1325, 1329-30 (11th Cir. 1995) (holding that no actions to prevent heat escape destroys subjective expectation of privacy, and thermal imaging reveals no intimate details); *United States v. Myers*, 46 F.3d 668, 670 (7th Cir. 1995) (explaining that thermal imaging is analogous to intentionally exposed waste products and dog sniff cases), followed by *United States v. 15324 County Hwy.*, 219 F.3d 602 (7th Cir. 2000).

97. *United States v. Cusumano*, 67 F.3d 1497, 1510 (10th Cir. 1995) [*Cusumano II*].

98. *United States v. Porco*, 842 F. Supp. 1393 (D. Wyo. 1994) [*Cusumano I*]. The defendants, Porco, Cusumano, and Santanello apparently lived together and thus were charged together. *Id.* at 1395. Subsequent appeals have Cusumano's name first, so the case will be referred to as *Cusumano* for consistency.

99. *Id.* at 1396. The reading "did not reveal a very detailed image . . ." but it did show "hot spots" consistent with heat loss in a marijuana grow operation. *Id.*

100. *Id.* at 1398-99. The search warrant was obtained using a number of corroborating facts: 1) The defendants had paid rent in cash, but none of them had places of employment; 2) the electrical usage for the premises was unusually high; 3) a generator was being used throughout the day and night; 4) an electrician hired by the defendants stated that there was "unsafe wiring" being used for what he thought was "unlawful purposes;" 5) the landlord noticed a "musty odor" in the basement, and was told by the defendants that they were "growing vegetables;" 6) an insurance agent who had stopped by the house noticed wheel barrels and sacks of soil near the door to the basement, and had felt he was in "danger" by a man at the house that acted "very suspicious," and 7) the thermal imaging results. *Id.* at 1400. For a detailed list of items in the affidavit applying for the search warrant, see *United States v. Cusumano*, 83 F.3d 1247, 1248-49 (10th Cir.1996) (en banc) [*Cusumano III*].

“questionable whether they [the defendants] had any such expectation [of privacy] in the heat which was escaping from the building,” but that the defendants “have not established that society would be willing to accept such expectation as objectively reasonable.”¹⁰¹ Judge Brimmer held that “the Supreme Court has repeatedly held that the use of non-intrusive, extra-sensory devices to investigate people and objects does not constitute a search”¹⁰² Judge Brimmer concluded that because the second prong of the Katz test had not been met, and the DCI did not use an intrusive device or intrude into the curtilage of the home, no search had taken place.¹⁰³

On review before the United States Court of Appeals for the Tenth Circuit, a unanimous panel held that infrared imaging was a search, that it violated the Fourth Amendment, and was unconstitutional absent a warrant.¹⁰⁴ However, the panel affirmed the District Court on other grounds.¹⁰⁵ Applying the *Katz* test, the Tenth Circuit panel sided with *Ishmael*, deciding that a defendant did have a subjective expectation of privacy to heat escaping the home.¹⁰⁶ The court made it clear that defendants should not have to anticipate and guard against every investigative tool in the government’s arsenal to show an expectation of privacy.¹⁰⁷ However, the court did not agree with the “intimate details” analysis, as it concluded that a thermal imager intruded upon the privacy of the home because “the interpretation of that data allows the government to monitor those domestic activities that generate a significant amount of heat.”¹⁰⁸ The court found that because “a thermal imager enables the government to discover that which is shielded from the public by the walls of the home,” the warrantless use of a thermal imager violates the Fourth Amendment to the Constitution.¹⁰⁹

Soon after the opinion was issued, a majority of the entire

101. *Porco*, 842 F. Supp. at 1397.

102. *Id.*

103. *Id.* at 1398.

104. *United States v. Cusumano*, 67 F.3d 1497, 1510 (10th Cir. 1995).

105. *Id.* The panel concluded that there was “more than ample” evidence to support the warrant without the thermal imaging results, and therefore affirmed the decision of the District Court. *Id.*

106. *Id.* at 1502.

107. *Id.* at 1503. The court did not think it appropriate for the protections of the Fourth Amendment to be forfeited by an individual’s failure to ward off incursions by the latest government investigative tools. *Id.*

108. *Id.* at 1504. The court specifically agreed that the “imager cannot reproduce images or sounds,” but that it stripped the sanctuary of the home of the “right to be let alone” from arbitrary monitoring by government officials. *Id.*

109. *Id.* at 1509.

Tenth Circuit voted to rehear the appeal *en banc*.¹¹⁰ The *en banc* court affirmed the District Court's decision on other grounds because the application for a search warrant contained ample probable cause without the thermal imager results.¹¹¹ However, this time the *en banc* court exercised judicial restraint and decided that the issue of thermal imaging was not ripe for appeal because "any such decision is unnecessary to a resolution of defendant's appeal."¹¹² The *en banc* court then vacated the panel opinion, once again leaving the issue undecided in the Tenth Circuit.¹¹³ Circuit Judges Porfilio and McKay concurred in the judgment, but both argued that the issue of thermal imaging should be addressed because the court had agreed to hear "the entire Fourth Amendment question, including the use of the thermal imager . . ."¹¹⁴ Judge Porfilio then stated that he would not indulge his ego and address the issue, but that he "could not conclude use of the thermal imager constituted a search within the limits of the Fourth Amendment."¹¹⁵ Judge McKay, the author of the vacated panel opinion, Judge Henry, and Chief Judge Seymour agreed that thermal imaging violated the Fourth Amendment, and filed the vacated panel opinion as the dissent.¹¹⁶

With the panel opinion in *Cusumano II* vacated, all federal circuits either approved of thermal imager use, or had not definitively decided the question. The Fifth, Seventh, Eighth, and Eleventh Circuits all approved of thermal imaging,¹¹⁷ with the Third, Sixth, Ninth, and Tenth Circuits choosing not to address the issue.¹¹⁸ Only the First, Second, and

110. *United States v. Cusumano*, 83 F.3d 1247, 1249 (10th Cir. 1996) (*en banc*). The United States originally moved to rehear just the issue of the use of a thermal imager on a private residence, but the court subsequently decided to rehear the entire appeal. *Id.*

111. *Id.* at 1250.

112. *Id.* The *en banc* court determined there was sufficient evidence to establish probable cause without the thermal imaging evidence; therefore, the "unnecessary adjudication of constitutional questions" should be avoided pursuant to the doctrine of judicial restraint. *Id.* at 1250-51.

113. *Id.* at 1251.

114. *Id.* (Porfilio, J., concurring, McKay, J., concurring in part).

115. *Id.* (Porfilio, J., specially concurring).

116. *Id.* (McKay, J., dissenting). Judge Henry was one of the judges on the original panel that concluded thermal imaging violated the Fourth Amendment. *See United States v. Cusumano*, 67 F.3d 1497 (10th Cir. 1995). The third Judge on the original panel was the Honorable John L. Kane, Senior United States District Judge for the District of Colorado, sitting by designation. *Id.*

117. *See supra* note 96 and *supra* text accompanying notes 85-96.

118. *See United States v. Cusumano*, 83 F.3d 1247, 1250 (10th Cir. 1996) (*en banc*) (holding that because probable cause was established without the thermal imaging data, there is no need to address the issue of constitutionality); *United States v. Zimmer*, 14 F.3d 286 (6th Cir. 1994) (thermal imaging data was used, but its constitutionality was not addressed); *United States v. Deaner*, 1 F.3d 192, 197 (3rd Cir. 1993) (finding that the affidavit established probable cause without the thermal imaging data, so there is no

D.C. Circuits have not had a case involving thermal imaging, and only a few states have taken up the issue of thermal imaging with mixed results.¹¹⁹ Each court that addressed the issue of thermal imaging, whether state or federal, applied the two-prong *Katz* test when deciding whether thermal imaging violated the Fourth Amendment. However, although all courts used the *Katz* test, each had different reasons why thermal imaging was constitutional.¹²⁰ The issue was ripe for the United States Supreme Court.

PRINCIPAL CASE

In *Kyllo v. United States*, Justices Scalia, Souter, Thomas, Ginsberg, and Breyer form an interesting majority coalition, with Justice Scalia writing the opinion.¹²¹ Justice Scalia begins by recognizing that the “question of whether or not a Fourth Amendment ‘search’ has occurred” is not a simple one.¹²² “In assessing when a search is not a search, we have applied somewhat in reverse the principle first

reason to reach the question of thermal imaging’s constitutionality); *United States v. Feeney*, 984 F.2d 1053, 1056 (9th Cir. 1993) (holding that because probable cause was established without the thermal imaging data, there is no need to address the issue of constitutionality).

119. Compare *State v. McKee*, 510 N.W.2d 807 (Wis. Ct. App. 1993) (holding that thermal imaging does not violate the Fourth Amendment; no reasonable expectation of privacy using “waste heat,” and “dog sniff” analyses), and *State v. Cramer*, 851 P.2d 147 (Ariz. Ct. App. 1992) (holding that thermal imaging is not a search), with *State v. Deutsch*, 44 Cal. App. 4th 1224 (1996) (holding that thermal imaging violates the Fourth Amendment; subjective expectation of privacy in home, and reasonable expectation of privacy from government monitoring); *Pennsylvania v. Gindlesperger*, 743 A.2d 898 (Pa. 1999) (holding that thermal imaging violates Fourth Amendment), and *State v. Siegal*, 934 P.2d 176 (Mont. 1997) (holding that thermal imaging violates Montana state constitutional provision of right to privacy). The Wyoming Supreme Court has never addressed the issue of thermal imagers.

120. See, e.g., *supra* text accompanying notes 82-96. The Eighth Circuit, in *United States v. Pinson*, 24 F.3d 1056 (8th Cir. 1994), held that there was no subjective expectation of privacy in heat, and that any expectation would be unreasonable using the “waste-heat” and “dog-sniff” analyses. *Id.* at 1058. The Fifth Circuit, in *United States v. Ishmael*, 48 F.3d 850 (5th Cir. 1995), held that there was a subjective expectation of privacy, but that any expectation would be unreasonable because thermal imaging did not expose any “intimate details.” *Id.* at 854-55. The Eleventh Circuit, in *United States v. Robinson*, 62 F.3d 1325 (11th Cir. 1995), held that there was no subjective expectation of privacy in heat, and any expectation would be unreasonable because thermal imaging does not expose “intimate details.” *Id.* at 1329-30. The Seventh Circuit, in *United States v. Myers*, 46 F.3d 668 (7th Cir. 1995), held that there was no subjective expectation of privacy in heat, and that any expectation would be unreasonable using the “waste-heat” and “dog-sniff” analyses. *Id.* at 670.

121. *Kyllo v. United States*, 121 S. Ct. 2038 (2001).

122. *Id.* at 2042.

enunciated in *Katz*.”¹²³ The majority then rejects the test from *Katz*, at least in the context involving the “interior of homes,” stating that it has “often been criticized as circular.”¹²⁴ The majority decides that a new rule with a line “not only firm but also bright . . .” must be established to clearly specify what methods of surveillance of the home’s interior require a warrant.¹²⁵

The majority rejects what it calls a “mechanical interpretation” of the Fourth Amendment, and compares a thermal imager detecting heat radiating off outside walls to other technology such as powerful directional microphones that pick up sounds emanating from a house, and a satellite capable of picking up visible light emanating from a house.¹²⁶ It reasons that this type of interpretation would leave a homeowner at the mercy of advancing technology.¹²⁷ This advancing technology includes technology in development, such as thermal imagers, radar, and ultra-sound technologies that actually do see through walls.¹²⁸ The majority feels that because a mechanical interpretation must be rejected, “the rule we adopt must take account of more sophisticated systems that are already in use or in development” even though the technology used in the present case was “relatively crude.”¹²⁹

123. *Id.*

124. *Id.* at 2043. The *Katz* test has been criticized as circular because it only protects privacy that is “reasonable.” See *infra* note 181 and accompanying text. The question of what is reasonable and what is not is something about which the Court and the public often disagree. See *infra* note 182 and accompanying text. In addition, with advancing technology the public would have to protect themselves from all types of highly intrusive devices that are commonly available such as x-ray and directional microphones. See 1 WAYNE R. LAFAVE, SEARCH AND SEIZURE § 2.1(d) (3d ed. 1996); Richard A. Posner, *The Uncertain Protection of Privacy by the Supreme Court*, 1979 SUP. CT. REV. 173, 188 (1979). The majority acknowledges that it may be difficult to refine *Katz* where “areas such as telephone booths, automobiles, or even the curtilage and uncovered portions of residences are at issue,” but that an expectation of privacy for the interior of a home is automatically “reasonable;” thus, there is no need for discussion. *Kyllo*, 121 S. Ct. at 2043.

125. *Kyllo*, 121 S. Ct. at 2046.

126. *Id.* at 2044. In *Katz v. United States*, 389 U.S. 347 (1967), the government argued that there was no “physical penetration” of the walls of the phone booth by the device used to listen to a phone conversation. *Id.* at 352. The Court recognized that the absence of a physical intrusion or “trespass” could no longer “foreclose further Fourth Amendment inquiry.” *Id.* Justice Scalia compares the sound waves originating inside the phone booth that reach the exterior of the phone booth to heat waves from the interior of a home that reach the exterior of the home and refers to this as a “mechanical interpretation of the Fourth Amendment.” *Kyllo*, 121 S. Ct. at 2044.

127. *Kyllo*, 121 S. Ct. at 2044.

128. *Id.*

129. *Id.* The majority argues that “[t]he ability to ‘see’ through walls and other opaque barriers is a clear, and scientifically feasible, goal of law enforcement research

The majority points out that “[i]n the home, our cases show, *all* details are intimate details, because the entire area is held safe from prying government eyes.”¹³⁰ The majority then states that because “how warm—or even how relatively warm—Kyllo was heating his residence” is a detail of the home, how warm he heats his home is an “*intimate detail*.”¹³¹ However, the majority rejects the idea of just prohibiting the revelation of “intimate details” as “wrong in principle” and “impractical in application” for two reasons.¹³² First, the designations of which activities are intimate, and which are not, would be impossible and subject to interpretation.¹³³ Second, a police officer using the technology would have no way to determine if he would observe intimate details before he observed them.¹³⁴ The majority believes that these two issues would mean that officers would not be able to determine whether the use of the particular technology was constitutional in advance.¹³⁵ The new bright-line test states that if a device is used to explore details of the home that would previously have been unknowable without physical intrusion, and the device is not in general public use, then it is a search that requires a warrant.¹³⁶

The Dissent

The dissent, written by Justice Stevens and joined by Chief Justice Rehnquist, and Justices O’Connor and Kennedy, begins by making a distinction between “through-the-wall” and “off-the-wall” surveillance.¹³⁷ It argues that the Fourth Amendment was meant to protect the “inside of a home,” and thus this is a distinction of “constitutional magnitude.”¹³⁸ This “off-the-wall” technology does not give specific or detailed information regarding the interior of the home

and development.” *Id.*

130. *Id.* at 2045.

131. *Id.* (emphasis added).

132. *Id.*

133. *Id.*

134. *Id.* at 2046.

135. *Id.*

136. *Id.*

137. *Id.* at 2047 (Stevens, J., dissenting). Through-the-wall technology gives the observer or listener direct access into a private area (i.e. inside the home), and off-the-wall technology merely gives the observer information from the exterior of a home that is in the public sphere from which he can draw inferences. *Id.* (Stevens, J., dissenting).

138. *Id.* (Stevens, J., dissenting). The dissent cites *Payton v. New York*, 445 U.S. 573 (1980), stating that “searches and seizures *inside a home* without a warrant are presumptively unreasonable,” and explains that it is “well settled” that observations of property in “plain view” are presumptively reasonable. *Kyllo*, 121 S. Ct. at 2047 (Stevens, J., dissenting) (citing *Payton*, 445 U.S. at 586-87).

so any information about the interior of the home must be inferred.¹³⁹ The dissent feels that the majority wrongly focuses on the potential of “yet-to-be developed” technology that sees “through-the-wall,” rather than on the technology used in this case.¹⁴⁰

The dissent then questions the requirement of “general public use” for two reasons. First, the dissent points out that this rule will no longer apply to the same “intrusive equipment” when it becomes “in general public use.”¹⁴¹ Second, the dissent argues that the majority gives no guidance as to what is in general public use and what is not.¹⁴² The dissent claims that this becomes more problematic because the majority assumes that thermal imaging technology is not in general public use, an assumption it believes is contrary to the record.¹⁴³ The dissent also argues that the new rule created by the majority is “too broad and too narrow.”¹⁴⁴ The rule is too broad since it would also encompass techniques used by the police that have already been ruled constitutional, but may be utilized in a new device.¹⁴⁵ Similarly, the rule regarding the use of technology should not be so narrow as to exclude other places, such as the telephone booth in *Katz* or an office building.¹⁴⁶ The dissent points out that the Fourth Amendment protects people, not places, and thus a rule limited to the “interior of the home” is too narrow.¹⁴⁷

The dissent recognizes that threats to privacy “may flow from advances in the technology available to law enforcement.”¹⁴⁸ However, the dissent believes that the “countervailing privacy interest is at best trivial” and that the “occasional homeowner” would not even care if

139. *Kyllo*, 121 S. Ct. at 2048-49 (Stevens, J., dissenting). The dissent argues that “for the first time in its history, the Court assumes that an inference can amount to a Fourth Amendment violation.” *Id.* at 2049 (Stevens, J., dissenting).

140. *Id.* at 2047-48 (Stevens, J., dissenting). The majority agrees that this technology is “relatively crude.” *See supra* note 129 and accompanying text.

141. *Kyllo*, 121 S. Ct. at 2050 (Stevens, J., dissenting).

142. *Id.* (Stevens, J., dissenting).

143. *Id.* (Stevens, J., dissenting). The record reveals that thermal imaging is widely used and available to the public for rent. *Id.* (Stevens, J., dissenting).

144. *Id.* at 2050-51 (Stevens, J., dissenting).

145. *Id.* at 2050 (Stevens, J., dissenting). This would include technology such as mechanical substitutes for dog sniffs, or similar technology. *Id.* *See* *United States v. Place*, 462 U.S. 696, 707 (1983) (holding that a dog sniff that “discloses only the presence or absence of narcotics” is not a search under the Fourth Amendment); *See supra* note 90.

146. *Kyllo*, 121 S. Ct. at 2051 (Stevens, J., dissenting). *See Katz v. United States*, 389 U.S. 347, 351 (1967).

147. *Kyllo*, 121 S. Ct. at 2051 (Stevens, J., dissenting).

148. *Id.* at 2052 (Stevens, J., dissenting).

anyone noticed the amounts of heat emanating from his house.¹⁴⁹ The dissent argues: “Surely, there is a significant difference between the general and well-settled expectation that strangers will not have direct access to the contents of private communications . . .” and heat emanating from the wall of a home.¹⁵⁰ The dissent would exercise judicial restraint and address the specific technology used in this case, rather than attempt to craft an “all-encompassing” rule for the future.¹⁵¹ The dissent feels there is no need to create a new rule to decide this case.¹⁵² “It would be far wiser to give legislators an unimpeded opportunity to grapple with these emerging issues rather than to shackle them with prematurely devised constitutional constraints.”¹⁵³

ANALYSIS

Although the majority uses thermal imaging technology as its rationale for adopting its new rule, the purpose of the rule is to “confront . . . what limits there are upon this power of technology to shrink the realm of guaranteed privacy,”¹⁵⁴ and to provide a “line . . . not only firm but also bright—which requires clear specification of those methods of surveillance that require a warrant.”¹⁵⁵ This new rule was designed as a guide for all developing and future technologies, so that “people in their houses, as well as the police,” know precisely when utilizing technology constitutes a search.¹⁵⁶ Unfortunately, it is the precision the majority seeks that is lacking in this new rule.

General Public Use

The problem with the standard of “general public use” is that the majority fails to define what constitutes “general public use,” so there are no contours to the supposed “bright-line” rule. The dissent attempts to direct the majority’s attention to the fact that in utilizing this standard they have not defined what constitutes general public use, or even made an informed factual determination whether thermal imagers are in general public use.¹⁵⁷ The majority dismisses this point in a footnote by stat-

149. *Id.* at 2051 (Stevens, J., dissenting).

150. *Id.* (Stevens, J., dissenting).

151. *Id.* at 2052 (Stevens, J., dissenting).

152. *Id.* at 2047 (Stevens, J., dissenting).

153. *Id.* at 2052 (Stevens, J., dissenting).

154. *Id.* at 2043.

155. *Id.* at 2046. *See supra* text accompanying note 125.

156. *Kyllo*, 121 S. Ct. at 2046. “[T]he rule we adopt must take account of more sophisticated systems that are in use or in development.” *Id.* at 2044.

157. *Id.* at 2050 (Stevens, J., dissenting).

ing that the Court's precedent has established the standard, and that they can "quite confidently say that thermal imaging is not 'routine'" ¹⁵⁸ However, the majority's conclusion that the Court's precedent has defined the standard of "general public use" is incorrect, and the claim by the majority that thermal imaging is not "routine" is countered by an inquiry into the use of thermal imagers.

First, the Court's precedent has never established a "general public use" standard, so relying on precedent to define "general public use" will not work. The majority cites one previous Supreme Court opinion, *California v. Ciraolo*, to support the proposition that the Court's precedent has established the "general public use" standard. ¹⁵⁹ However, the only holding in *Ciraolo* was that an expectation of privacy from naked-eye aerial observation was unreasonable and thus such an observation did not constitute a search under the Fourth Amendment. ¹⁶⁰ In *Ciraolo*, the Court did not focus on a device, as the Court does in *Kyllo*; rather, it determined that "air travel" was "routine," and thus there could be no reasonable expectation of privacy from aerial surveillance. ¹⁶¹ The Court in *Ciraolo* does not define "routine" because the holding was limited to air travel and there was no question air travel was widely utilized by the public. Commercial air travel had been widely utilized by the public since 1945 and had grown tremendously with the advent of jet-powered aircraft (1954), wide-bodied transports (1970), and supersonic travel (Concorde 1970). ¹⁶² The dissent in *Ciraolo* agreed, without any discussion or need of a definition, that air travel was routine. ¹⁶³ Since the

158. *Id.* at 2046 n.6.

159. *Id.* (quoting *California v. Ciraolo*, 476 U.S. 207, 215 (1986)). For a discussion of *Ciraolo*, see *supra* text accompanying notes 70-72.

160. *Ciraolo*, 476 U.S. at 215. The Court in *Ciraolo* reasoned that that there was no reasonable expectation of privacy from a plane flying at 1000 feet because "[a]ny member of the public flying in this airspace who glanced down could have seen everything that these officers observed." *Id.* at 213-14. See *supra* note 72.

161. See *Ciraolo*, 476 U.S. at 215; *supra* text accompanying notes 70-72.

162. 7 ENCYCLOPEDIA BRITANNICA 403-04 (15th ed. 1984). In 1949 there were over 16,700,000 passengers flying, up from 2,000,000 in 1939. *Id.* at 403. The first jet-transport, the Boeing 707, was put into service in 1958, and by the 1960's, airlines were the dominant form of transportation for the entire world. *Id.* Wide-bodied aircraft, such as the Boeing 747 put into service in early 1970, and the first supersonic travel by the Concorde on September 14, 1970, only increased airline travel. *Id.* With the development of smaller commercial aircraft, helicopters, and private citizens learning to fly, air travel for business, pleasure, and recreation dominated the transportation industry by 1986, *id.* at 403-04, when *Ciraolo* was decided. *Ciraolo*, 476 U.S. at 207.

163. *Ciraolo*, 476 U.S. at 223-24 (Powell, J., dissenting). The dissent argued that the "actual risk to privacy from commercial or pleasure aircraft is virtually nonexistent" because the public would at most obtain a "fleeting, anonymous, and nondiscriminating glance of the landscape and buildings over which they pass." *Id.* (Powell, J., dissenting).

Ciraolo court does not define “routine,” or “general public use,” the majority’s reliance on this precedent to define its new standard is misplaced, especially because one cannot compare thermal imaging to air travel.

Because the majority in *Kyllo* fails to give any guidance or definition of “general public use,” the standard creates fuzzy gray areas, rather than a precise bright line, causing confusion among those who use new technology and the lower courts that rule on their use. No other Court precedent has defined what is meant by “general public use.” Both *Dow Chemical v. United States* and *Florida v. Riley* adopted the *Ciraolo* “routine” standard, but both were discussing air travel.¹⁶⁴ Because the majority in *Kyllo* feels confident that thermal imagers are not in general public use, it gives no guidance to lower courts in determining what is and what is not in general public use.¹⁶⁵ However, *Kyllo* involves a definite question of whether thermal imagers are in general public use.¹⁶⁶ Based on this lack of guidance from the United States Supreme Court, a trial court could find that a thermal imager is in “general public use” tomorrow and thus be constitutional to use.¹⁶⁷ Without guidance, another

164. See *Dow Chemical v. United States*, 476 U.S. 227, 239 (1986) (holding that an expectation of privacy from use of aerial mapping camera unreasonable, decided the same day as *Ciraolo*); *supra* text accompanying notes 73-74; *Florida v. Riley*, 488 U.S. 445, 451-52 (1989) (holding an expectation of privacy from surveillance of helicopter is unreasonable); *supra* text accompanying notes 75-80.

165. *Kyllo v. United States*, 121 S. Ct. 2038, 2046 n.6 (2001).

166. The dissent in *Kyllo* points to the record that indicates the thermal imaging device used in this case numbered close to a thousand manufactured units, with 4000 – 5000 predecessor units manufactured. *Id.* at 2050 n.5 (Stevens, J., dissenting). This unit competes with a product numbering from 5000 – 6000 units, and that it is readily available to the public for commercial, personal, or law-enforcement purposes. *Id.* (Stevens, J., dissenting). Thermal imagers can also be rented from a half-dozen national companies, just an 800 number away, by anyone who wants one. *Id.* (Stevens, J., dissenting). The dissent further points out that this issue could be dealt with by having an evidentiary hearing to determine the facts of the availability of thermal imagers. *Id.* (Stevens, J., dissenting). See *infra* note 167.

167. The question of general public use is a question of fact, which requires a ‘clearly erroneous’ standard of review. *Concrete Pipe & Prods. v. Constr. Laborers Pension Trust*, 508 U.S. 602, 623 (1993). “[T]he ‘clearly erroneous’ standard is significantly deferential, requiring a ‘definite and firm conviction that a mistake has been committed.’” *Id.* There are numerous facts to support a finding that thermal imaging is in general public use. The thermal imager that was used in *Kyllo* can be rented from <http://www.es.wapa.gov/equip/equip1st.cfm> (last visited Dec. 3, 2001). Kash, *supra* note 25, at 1298-99, states: “The imager detects hot spots on the exterior of the building which could be observed by any member of the public equipped with a commercially available device.” Thermal imaging is used commercially to check moisture-laden roofs, overloaded power lines, substandard building insulation, search and rescue operations, border patrol for illegal aliens, utility company energy audits, forest fire hot spots, pros-

court could conclude tomorrow that a thermal imager is not in general public use. With no defined standard, there can only be confusion, not a bright line.

The standard of “general public use” is also flawed because the threat to privacy is likely to “grow, rather than recede, as the use of intrusive equipment becomes more readily available.”¹⁶⁸ The privacy protections the majority seeks dissipate when the equipment comes into general public use.¹⁶⁹ This standard is associated with an assumption-of-risk rationale because once the device is in “general public use,” the public assumes the risk of protecting itself from the use of that technology.¹⁷⁰ This type of standard is “tautological,” or circular, because the law protects the public from devices that are not in “general public use” in the beginning, but after a “subjective” determination by the court that the device is in “general public use,” the public then has to protect itself.¹⁷¹ This is exactly what the court in *United States v. Ishmael* and the dissent in *United States v. Cusumano* were concerned with, and expressly rejected.¹⁷² The “general public use” standard is substantively the *Katz* test because any expectation of privacy from a device in “general public

pecting, treasure hunting, energy efficiency in homes, buried bodies, locating victims/firefighters in structure fires, environmental protections, explosives search, fugitive searches, vehicle pursuits, perimeter surveillance, medical exams, physical abuse (weeks old bruises seen on victims), accident investigation (initial, secondary points impact, skid marks), crime scene investigation, and discovering hidden contraband. See Larks-Stanford, *supra* note 25, at 575; Wilson, *supra* note 25, at 898-99; <http://www.x20.org> (last visited Dec. 3, 2001); <http://www.flir.com/index.htm/goto> (last visited Dec. 3, 2001).

168. *Kyllo*, 121 S. Ct. at 2050 (Stevens, J., dissenting).

169. *Id.* (Stevens, J., dissenting).

170. See Christopher Slobogin, *Technologically-Assisted Physical Surveillance: The American Bar Association's Tentative Draft Standards*, 10 HARV. J. LAW & TECH. 383, 400 (1997) (rejecting the “general public use” standard as flawed because it would eliminate privacy expectations in the home since “so many highly intrusive devices are readily ‘available’ to the public”).

171. *Id.* (standing for the proposition that the general public use rationale is tautological). See also Melvin Gutterman, *A Formulation of the Value and Means Models of the Fourth Amendment in the Age of Technologically Enhanced Surveillance*, 39 SYRACUSE L. REV. 647, 670 (1988) (stating that the assumption of risk rationale overlooks the central issue of a threat to our sense of security); see *supra* note 38 (discussing *Boyd v. United States*, 116 U.S. 616 (1886)).

172. See *United States v. Ishmael*, 48 F.3d 850, 854-55 (5th Cir. 1995) (explaining that defendants need not anticipate and guard against every invasive tool the government has, otherwise privacy in the home would be left to the mercy of advancing technology); *supra* text accompanying notes 92-95; *United States v. Cusumano*, 83 F.3d 1247, 1259 (10th Cir. 1996) (en banc) (McKay, J., dissenting); *supra* text accompanying notes 98-116.

use” is considered unreasonable.¹⁷³ With the majority’s rejection of “circular” and “subjective” reasoning, its utilization of a “general public use” standard is disingenuous.¹⁷⁴ Further, the majority in *Kyllo* does not provide a definition for courts to use when determining when a device is in “general public use,” creating fuzzy gray areas rather than a bright line.

Content and Expectations of Privacy: Intimate Details vs. Details of the Home

The Court’s “bright-line” rule also fails because it offers no definition of “details of the home.”¹⁷⁵ The majority rejects just prohibiting the observation of “intimate details” of a home because the designation of what activities are intimate would be impossible and subject to interpretation, and officers would not be able to know in advance if they were going to observe an intimate detail.¹⁷⁶ The majority instead proclaims that all details of the home are intimate details.¹⁷⁷ The Court then prohibits observing details of the home, which according to its earlier statements are intimate details.¹⁷⁸ Following the Court’s own line of reasoning, this means that “details of the home” are also subject to interpretation and impossible to determine in advance because they are intimate details.¹⁷⁹ With no definition of what constitutes “details of the home,” the standard is subject to varying interpretation and is not a bright-line rule.

The majority might not offer a definition of “details of the home” because it is not a simple thing to do. As the majority points out,

173. See *Florida v. Riley*, 488 U.S. 445, 450 (1989) (holding that there is no reasonable expectation of privacy from helicopter surveillance since private and commercial helicopter flight is routine in this country); *California v. Ciraolo*, 476 U.S. 207, 213-15 (1986) (holding that there is no reasonable expectation of privacy from aerial surveillance of a back yard because air travel is “routine” and police officers do not have to shield their eyes when traveling public airways); *Dow Chemical Co. v. United States*, 476 U.S. 227, 238 (1986) (holding that there is no reasonable expectation of privacy from the use of conventional, albeit precise, commercial camera commonly used in mapmaking); *supra* text accompanying notes 70-80.

174. *Kyllo*, 121 S. Ct. at 2043. See *supra* note 124 and accompanying text.

175. *Kyllo*, 121 S. Ct. at 2046. For simplicity’s sake the standard of “details of the home that would previously be unknowable without physical intrusion,” *id.*, will just be referred to as “details of the home.”

176. *Id.* at 2045-46. See *supra* notes 131-35 and accompanying text.

177. *Id.* at 2045 (“In the home, our cases show, *all* details are intimate details”); *supra* note 176.

178. See *supra* notes 176-77 and accompanying text.

179. *Id.*

“details of the home,” or intimate details, would be subject to interpretation and difficult to determine in advance.¹⁸⁰ “Details of the home” would also be subject to interpretation because modern life, with its technological advances, has had an effect on what a person can reasonably expect to keep private.¹⁸¹ The *Katz* test attempts to address this problem by relying on flexibility instead of a bright-line rule that applies to modern life and all technological advances. However, studies have also shown that the Court’s interpretation of what society expects to keep “private” and what society accepts as a “reasonable” intrusion into privacy often do not coincide.¹⁸² The dissent in *Kyllo* wonders if a “homeowner would even care if anybody noticed the relative amounts of heat emanating from the walls of his house”¹⁸³ The majority does not address whether it is reasonable to expect the heat emanating from the walls of the home to be private.¹⁸⁴ The majority’s lack of a definition or guideline for determining what constitutes “details of the home” underscores the fact that this is not easy to determine, and will still be subject to interpretation.

Problems with the Majority’s “Bright-Line” Rule

Although the majority should be commended for taking a step in the right direction, a bright-line rule must take into account the public’s varying expectations of privacy. Studies and common sense indicate varying levels of expectations of privacy.¹⁸⁵ Privacy regarding phone conversations and heat escaping from the home differ because society expects their conversations and communications to be private, more so than heat from the wall of a home.¹⁸⁶ Comparing the thermal imagers in

180. *Kyllo*, 121 S. Ct. at 2045-46.

181. See Thomas K. Clancy, *What Does the Fourth Amendment Protect: Property, Privacy, or Security?*, 33 WAKE FOREST L. REV. 307, 335 (1998).

182. See, e.g., Christopher Slobogin & Joseph E. Schumacher, *Reasonable Expectations of Privacy and Autonomy in Fourth Amendment Cases: An Empirical Look at “Understandings Recognized and Permitted by Society”*, 42 DUKE L.J. 727 (1993) (explaining that actions such as dog-sniffs, entry onto private property with no-trespassing signs posted, going through discarded garbage, and over-flights by helicopters, all considered not to be searches by the Court, were considered more invasive of privacy by individuals than the Court).

183. *Kyllo*, 121 S. Ct. at 2051 (Stevens, J., dissenting).

184. The majority argues that a distinction between information homeowners would care about keeping private, and what they would not care about is impractical. *Id.* at 2046. See *supra* text accompanying notes 130-135.

185. See generally Slobogin, *supra* note 182 (discussing varying levels of expectations of privacy).

186. See generally Barna, *supra* note 25, at 232 (arguing for hierarchical levels of privacy). Examples of this problem occur in *United States v. Cusumano*, 83 F.3d 1247, 1257 (1996) (McKay, J., dissenting), where Judge McKay compares waste heat to waste

Kyllo to future technologies will present the same problems as comparing thermal imaging to dog sniffs and garbage, or heat loss and communications, unless varying levels of privacy are considered.¹⁸⁷ Although "argument by analogy is a time-honored method of legal reasoning . . . it tends to cause attorneys and judges to overstate and misapply prior case law."¹⁸⁸ Considering varying levels of privacy creates "a workable accommodation between the needs of law enforcement and the interests protected by the Fourth Amendment," something the majority admits is important.¹⁸⁹ While law enforcement has focused on drug labs and marijuana farms, such producers have evaded discovery by moving their operations indoors and utilizing technology in their favor.¹⁹⁰ "Crime, even in the privacy of one's own quarters, is, of course, of grave concern to society . . ."¹⁹¹ and the Fourth Amendment should not be used "to shield unlawful activity within one's home when there are noninvasive methods of detecting such criminal activities through legitimate byproducts . . ."¹⁹²

The rule adopted by the majority does not consider varying expectations of privacy because it excludes new technology even if it is limited in what it reveals. New hand-held devices utilize gas chromatography and mass spectrometry to sample air, earth, and water to determine if a home is being used as a drug lab.¹⁹³ Groups such as the Nuclear Emergency Search Team (N.E.S.T.) utilize "specially-outfitted vans, helicopters, and aircraft" to search for terrorists with atomic devices that hide in houses without alerting the public to danger.¹⁹⁴ These and other

vibrational energy from a conversation (a conversation will usually not be "propagated" into the public sphere unless the volume is high, such as in yelling), and *United States v. Pinson*, 24 F.3d 1056, 1058 (8th Cir. 1994), which compared "waste-heat" to garbage (waste heat is not intentionally thrown out like garbage), and a thermal imager to a trained dog that detected the presence of drugs (thermal imaging is not as limited).

187. See *supra* note 186 and accompanying text.

188. See *Barna*, *supra* note 25, at 279.

189. *Kyllo*, 121 S. Ct. at 2045 (quoting *Oliver v. United States*, 466 U.S. 170, 181 (1984)).

190. See *Wilson*, *supra* note 25, at 891-92. In 1986, the DEA seized 1077 indoor marijuana-growing operations, but by 1992, the number had grown to 3849. Not only are these indoor sites technically complex with the perfect growing environment, but they are also located in creative sites that are difficult to uncover. *Id.* at 892.

191. *Johnson v. United States*, 333 U.S. 10, 14 (1948).

192. *United States v. Robinson*, 62 F.3d 1325, 1330 (11th Cir. 1995).

193. See Peter Joseph Bober, *The "Chemical Signature" of the Fourth Amendment: Gas Chromatography/Mass Spectrometry and the War on Drugs*, 8 SETON HALL CONST. L.J. 75 (1997).

194. See David A. Koplow, *Arms Control Inspection: Constitutional Restrictions on Treaty Verification in the United States*, 63 N.Y.U.L. REV. 229, 290, 358 n.389 (1988); Barry L. Rothberg, *Averting Armageddon: Preventing Nuclear Terrorism in the United*

devices reveal details about a home, but arguably would not be considered intruding into the privacy of the home by law-abiding citizens.¹⁹⁵ This rule effectively protects criminals from all new technology utilized by the police because even if the “investigative procedure . . . is so limited both in the manner in which the information is obtained and in the content of the information revealed by the procedure,” it still reveals a detail of the home.¹⁹⁶

Inferences

This bright-line rule is also too broad because the thought processes, or inferences, of the police may no longer be assumed not to be an illegal search.¹⁹⁷ To infer is “to derive by reasoning or implication; to conclude from facts or premises; to accept or derive as a consequence, conclusion, or probability.”¹⁹⁸ An example of an inference by police is illustrated in *United States v. Knotts*, where police used a beeper to track a container to a cabin, then inferred that the container was inside the

States, 8 DUKE J. COMP. & INT’L L. 79, 122-23 (1997). At times, the use of technology may be justified due to “exigent circumstance[s].” *Ker v. California*, 374 U.S. 23, 40-41 (1963) (holding that particular circumstances allow a search without a warrant under the Fourth Amendment). However, the seriousness of an offense does not create an emergency justifying exigent circumstances. *Mincey v. Arizona*, 437 U.S. 385, 393 (1978) (holding the warrantless search of a homicide scene absent a warrant was unreasonable). Others have also argued that a threatened crime (i.e. blow up the city with a nuclear device) is merely a threat of a crime, and does not warrant the broad retraction of the Fourth Amendment rights of everyone in the city. See A. L. DeWitt, *The Ultimate Exigent Circumstance*, 5 KAN. J.L. & PUB. POL’Y 169, 173-74 (1996).

195. See Slobogin, *supra* note 182, at 767.

196. *United States v. Place*, 462 U.S. 696, 707 (1983). The *Place* court previously held that utilizing this type of device did not constitute a search. *Id.*

197. The agents in *Kyllo* used the thermal imaging data to infer that halide lights were being used in the home because of the hot spots on the walls, and that those lights were being used to grow marijuana. *Kyllo v. United States*, 121 S. Ct. 2038, 2041 (2001). The thermal imager in this case did not show people or activities in the home. *United States v. Kyllo*, No. 92-51-FR, 1996 U.S. Dist. LEXIS 3864, at *3-4 (D. Or. March 15, 1996). See *supra* text accompanying note 15. Types of inferences include information gained from pen register data from the phone company, utility records from the power company, and discarded garbage, each of which do not require a warrant. *Smith v. Maryland*, 442 U.S. 735, 745-46 (1979) (holding that a pen register records the number dialed from a particular phone, but does not reveal the identity of the person who dialed); *United States v. Kyllo*, 190 F.3d 1041, 1043 (1999) (stating that utility records indicate high power usage, but do not reveal that for which the power is being used); *California v. Greenwood*, 486 U.S. 35, 43-44 (1988) (holding the same for discarded trash).

198. WEBSTER’S NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE 1158 (3rd ed. 1971).

cabin.¹⁹⁹ The police had to make an inference that the beeper was inside the cabin because they did not use the beeper to locate or track the container while inside the cabin, and this was held not to be a search.²⁰⁰ The *Kyllo* majority argues that an inference does not insulate a search from being held unconstitutional because that position is “blatantly contrary” to *United States v. Karo*, where agents “inferred” that a can of ether was in a house by activating a beeper, and the activity was held to be an illegal search.²⁰¹ However, the Court in *Karo* made it very clear that agents did not “infer” that the can of ether was in the house from the beeper; rather, the agents “positively determined that the ‘beeper’ can . . . was now inside the premises to be searched because the ‘beeper’ locator (direction finder) *pinpointed* the beeper signal as emanating from the above-described premises.”²⁰² The Court in *Karo* also determined that a search of a locker in a warehouse—a separate location from the example noted by the *Kyllo* Court—had not occurred even though the beeper had gotten the police in the general vicinity because the beeper could not be pinpointed, and thus no information about the “content of the locker” was revealed.²⁰³

A hypothetical example of an inference is described by the dissent in *Kyllo* where police use an infrared camera to observe a pizza man deliver a pizza to a house.²⁰⁴ From this information, it can be inferred that there is a person in the house, that they enjoy pizza, and someone will shortly be eating pizza.²⁰⁵ However, using the new rule from *Kyllo*, this is an illegal search because technology not in “general public use” was used to obtain information about the interior of the home even though the interior of the home was not observed. One could exchange the pizza for drugs and arrive at the same result. In both the hypothetical and *Knotts*, the police inferred information about the interior of the home

199. *United States v. Knotts*, 460 U.S. 276, 277-79 (1983). *See supra* notes 62-66 and accompanying text (discussing *Knotts*).

200. *Knotts*, 460 U.S. at 285.

201. *Kyllo*, 121 S. Ct. at 2044. *United States v. Karo*, 468 U.S. 705, 714 (1984).

202. *Karo*, 468 U.S. at 714 (emphasis added). *See supra* notes 67-68 and accompanying text (discussing *Karo*).

203. *Karo*, 468 U.S. at 720-21. The police used the beeper to get in the general vicinity of the container, and then used their noses to find the actual locker. *Id.* at 721. The *Karo* court concluded that because the beeper “did not identify the specific locker in which the ether was located . . . [m]onitoring the beeper revealed nothing about the contents of the locker . . .” and thus was “not a search.” *Id.* at 720. “Had the monitoring disclosed the presence of the container within a particular locker the result would be otherwise . . .” *Id.* at 721.

204. *Kyllo*, 121 S. Ct. at 2051 (Stevens, J., dissenting).

205. *Id.* (Stevens, J., dissenting).

with the aid of technology.²⁰⁶ In *Karo* there was no inference made because the fact that the container was in the house was positively determined by locating the beeper inside the house.²⁰⁷ The thought processes of the police must be protected because the Court's own precedent indicates that an inference is not a search.²⁰⁸ The rule in *Kyllo* is too broad because inferences made by the police can become illegal searches.

Judicial Restraint

The last problem with the majority holding is that it makes clear it is focusing on "more sophisticated" technology that may be used in the future, rather than on the technology used in *Kyllo*.²⁰⁹ "If there is one doctrine more deeply rooted than any other in the process of constitutional adjudication, it is that we ought not pass on questions of constitutionality . . . unless such adjudication is unavoidable."²¹⁰ "This is a 'fundamental rule of judicial restraint,' . . . and is grounded in basic principles regarding the institution of judicial review and this Court's proper role in our federal system."²¹¹ When the petitioner in *United States v. Silverman* tried to get the court to consider "recent and projected developments in the science of electronics," the Court responded: "We need not here contemplate the Fourth Amendment implications of these and other frightening paraphernalia which the vaunted marvels of an electronic age may visit upon human society."²¹² Like *Silverman*, the *Kyllo* court should have exercised judicial restraint, and ignored pleas from the petitioner to consider "[s]cientific advances that jeopardize the core values of the Fourth Amendment"²¹³

CONCLUSION

In *Kyllo*, the Court confuses the issue of when the use of new and developing technology constitutes a search with a rule that has no contours. The Court states that a device that is not in "general public

206. See *supra* notes 199-200 and accompanying text.

207. See *supra* notes 67, 202 and accompanying text.

208. Compare *United States v. Knotts*, 460 U.S. 276 (1983) (holding that police inferring that the beeper was inside the cabin was not a search), with *United States v. Karo*, 468 U.S. 705 (1984) (holding that police monitoring the beeper while inside the house was a search).

209. *Kyllo*, 121 S. Ct at 2044.

210. *Spector Motor Service, Inc. v. McLaughlin*, 323 U.S. 101, 105 (1944).

211. *Zobrest v. Catalina Foothills Sch. Dist.*, 509 U.S. 1, 14-15 (1993) (Blackmun, J., dissenting) (citing *Three Affiliated Tribes of Fort Berthold Reservation v. World Eng'g, P.C.*, 467 U.S. 138, 157 (1984)).

212. *Silverman v. United States*, 365 U.S. 505, 508-09 (1961).

213. Petitioner's Brief, *supra* note 20, at 40.

use” cannot be used without a warrant, but gives no guidance as to what constitutes “general public use.” Further, what constitutes “details of the home” is also unclear, as the Court provides no definition. This lack of guidance from the Court transforms the contours of the new rule from a bright line to “fuzzy shades of gray.” The Court reasons that the new rule is necessary because of technology that is “scientifically feasible” in the future, but fails to adequately explore the technology actually used in this case before creating this broad new rule. This rule must be further developed to define general public use and details of the home, while considering varying expectations of privacy. Otherwise, the rule should be changed so that the issue of when the use of new and developing technologies constitutes a search can be determined.

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