THERMAL IMAGING DEVICES: HOW THE GOVERNMENT PRIVATELY REPEALED THE FOURTH AMENDMENT

TABLE OF CONTENTS

I. INTRODUCTION

Constitutions are not ephemeral documents, designed to meet passing occasions. The future is their care, and therefore, in their application, our contemplation cannot be only of what has been but of what may be.[1]

In the past, the notion of x-ray vision was confined to the world of science fiction and comic books—embodied by the most famous cartoon superhero of all

1. William J. Brennan, Jr., *State Constitutions and the Protection of Individual Rights*, 90 HARV. L. REV. 489, 495 (1977).

time, Superman.[2] It now appears, however, that society, in an effort to combat the war on drugs, is prepared to bring fiction into reality.[3] George Orwell's *1984*[4] may no longer be an imaginary country where "big brother" is watching. The next time you are in your living room and hear the faint whir of a helicopter overhead, a Forward Looking Infrared Device (FLIR)[5]—the United States government's new spy device—could be searching your home.

A. *How FLIRs Work*

Technically, FLIRs compare the various surface temperatures of an object being observed with one another.[6] The instrument is passive—it does not penetrate or send any rays toward the area at which it is projected.[7] Although a FLIR cannot measure temperature, it does compare the amount of heat radiating from different objects.[8] FLIR results are recorded on video tape; objects with high surface temperatures are displayed in white, while cooler objects are displayed in shades of gray and black.[9] Among other purposes, these devices can identify inefficient building insulation, detect forest fire lines through smoke,[10] locate missing persons in forests, and detect overloaded power lines.[11]

---

2. MIKE BENTON, SUPERHERO COMICS OF THE GOLDEN AGE: THE ILLUSTRATED HISTORY 136-38 (1992).

3. *Cf.* Steven Wisotsky, *Crackdown: The Emerging "Drug Exception" to the Bill of Rights*, 38 HASTINGS L.J. 889, 925-26 (1987) (discussing how the "war on drugs" has reduced the protections historically afforded by the Bill of Rights and has produced "a political-legal context in which drug enforcement constitutes an exception to the principle that laws must comport 'with the deepest notions of what is fair and just.'").

4. GEORGE ORWELL, 1984 (1949).

5. A Forward Looking Infrared Device (FLIR) is also known as a thermal imager.

6. United States v. Olson, 21 F.3d 847, 848 n.3 (8th Cir. 1994).

7. United States v. Porco, 842 F. Supp. 1393, 1396 (D. Wyo. 1994). It should be noted that while a FLIR is passive and nonintrusive this is not constitutionally significant. One court suggested the notion that "thermal imagers collect heat 'passively' is a red herring." United States v. Field, 855 F. Supp. 1518, 1530 (W.D. Wis. 1994), *overruled by* United States v. Myers, 46 F.3d 668 (7th Cir. 1995). Specifically, an investigative device that invades a person's reasonable expectation of privacy is violative of the Constitution even though it is passive and nonintrusive. *Id.* (citing United States v. Taborda, 635 F.2d 131 (2d Cir. 1980)) (precluding the government's use of high-powered telescopes to peer into people's homes); *see also* 18 U.S.C. § 2511 (1994) (requiring a court order to install wiretaps).

8. United States v. Pinson, 24 F.3d 1056, 1057 (8th Cir. 1994).

9. United States v. Porco, 842 F. Supp. at 1396. More advanced FLIRs are now capable of distinguishing temperature differentials in color. For example, a FLIR used by Thermal Graphic Inc. can "split 50 degrees Celsius into 256 different colors and [can also] add a visual overlay so accurate [it] could spot a lighted cigarette from 1,400 feet and then identify the smoker." Ed Glenn, *An Eye in the Night Sky*, OREGON BUSINESS, Nov. 1, 1995, at 11, 11.

10. United States v. Porco, 842 F. Supp. at 1396.

11. United States v. Penny-Feeney, 773 F. Supp. 220, 223 n.4 (D. Haw. 1991), *aff'd on other grounds sub nom.* United States v. Feeney, 984 F.2d 1053 (9th Cir. 1993), *see also* John Hanchette, *To Snoop, Police Have New "Eye in the Sky,"* GANNETT NEWS SERVICE, Sept. 1, 1994 (noting that FLIRs, first used in combat aircraft, are capable of picking up a burglar hiding under a wheelbarrow, a freshly killed victim in a ditch, a recently vacated parking lot spot warmed by a car engine, and even an owl roosting in a suburban tree).

B. *FLIRs and Law Enforcement*

Law enforcement agencies use FLIRs to detect indoor marijuana cultivation because marijuana growing indoors needs heat lamps to simulate sunlight.[12] In light of the information a FLIR gains from a residence, the issue arises whether FLIR devices, which are physically nonintrusive,[13] violate the Fourth Amendment[14] absent a warrant.[15] When confronted with this issue, the majority of courts have concluded that no search occurred[16] under the current Fourth

---

12. United States v. Penny-Feeney, 773 F. Supp. at 224; *see also* United States v. Pinson, 24 F.3d at 1057-58. In *Pinson*, the court explained that the optimum growing temperature for marijuana is between 68 and 72 degrees Fahrenheit. *Id.* To reach this temperature, heat lamps, also known as high intensity discharge lights, are used and require bulbs between four hundred and one thousand watts, which generate heat of approximately 150 degrees or more. *Id.* at 1057; *see also* Max Yields, *Closet Climate Control*, HIGH TIMES, Nov. 1995, at 80 (suggesting that the optimum growing temperature for marijuana is 75 degrees Fahrenheit, with fluctuations of 10 degrees either way when growing indoors).

13. United States v. Porco, 842 F. Supp. at 1396.

14. U.S. CONST. amend. IV. 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.

Id.

15. The information gained from a structure through the use of a thermal imager is a central aspect of most, if not all, cases dealing with this constitutional issue. Specifically, courts that are willing to allow the use of thermal imagers suggest that the information gained is of minimal value and can, at best, only inform the observer of the presence and intensity of heat emanating from a home. *See, e.g.*, United States v. Penny-Feeney, 773 F. Supp. at 223 ("It is important to stress that the instrument's sole function is to detect differences in surface temperatures of objects."). By contrast, courts holding that the use of FLIRs violate the Fourth Amendment point out that these devices are highly powerful, indiscriminate, and intrusive devices. *See, e.g.*, United States v. Field, 855 F. Supp. 1518, 1531 (W.D. Wis. 1994) (noting that thermal imagers are capable of outlining a human figure through thin plywood, or determining the level of hot coffee contained in a cup), *overruled by* United States v. Myers, 46 F.3d 668 (7th Cir. 1995).

16. *See, e.g.*, United States v. Ishmael, 48 F.3d 850, 857 (5th Cir.) (concluding that the use of thermal imaging did not violate the defendant's Fourth Amendment rights despite his subjective expectation of privacy), *cert. denied*, 116 S. Ct. 74 (1995); United States v. Myers, 46 F.3d 668, 670 (7th Cir. 1995) (concluding that society would not recognize an expectation of privacy in heat emitted from a home as "reasonable"); United States v. Ford, 34 F.3d 992, 997 (11th Cir. 1994) (finding that use of a thermal imaging device on a mobile home was not violative of the Fourth Amendment in view of the low resolution of thermal imagery and similarities between waste heat and other emissions, such as garbage and smoke, which are not protected by the Fourth Amendment); United States v. Pinson, 24 F.3d at 1059 (holding that society would not find a subjective expectation in heat emanations from a home, like odors from luggage and searches of garbage, to be objectively reasonable); United States v. Porco, 842 F. Supp. at 1397 (concluding that use of thermal imaging, like using beepers to track vehicles, dogs to sniff luggage at airports, and pen registers to ascertain phone numbers called from a private residence, is not a search in the Fourth Amendment context), *rev'd sub nom.* United States v. Cusumano, 67 F.3d 1497 (10th Cir. 1995); United States v. Kyllo, 809 F. Supp. 787, 792 (D. Or. 1992) (holding use of thermal imaging

Amendment standard.[17] A few courts, however, have concluded the warrantless use of a FLIR on a private residence constitutes an illegal search in violation of the Fourth Amendment.[18]

This Note will analyze how courts have applied the current Fourth Amendment standard in cases involving the warrantless use of FLIRs. This Note focuses only on the constitutional implications of the prewarrant use of thermal imagers. Initially, the Note will focus on the origins of the current Fourth Amendment inquiry, as well as its application by the United States Supreme Court in cases dealing with the use of advanced technology. Next, the Note will analyze specific cases in which courts have determined that warrantless use of FLIRs do not result in constitutional violations. The Note will then review cases in which constitutional violations have been found—including a discussion of courts' reasons for rejecting the rationale provided by jurisdictions reaching contrary conclusions. Finally, the Note will explain why the prewarrant use of FLIRs should be found unconstitutional under the current Fourth Amendment analysis.

II. THE CURRENT FOURTH AMENDMENT INQUIRY

A. *The* Katz *Analysis*

Any analysis used to determine whether an intrusion by the government on the privacy of its citizens constitutes a violation of the Fourth Amendment must begin with an explanation as to when the protections of that amendment are triggered. The modern test to determine whether governmental conduct does not conflict with the Fourth Amendment was set out in *Katz v. United States.*[19] In *Katz,* the United States Supreme Court concluded that a Fourth Amendment violation occurred when officers placed a recording device outside a public

---

device did not reveal intimate details of the home nor was there an intrusion upon the privacy of the individuals within the home), *remanded,* 26 F.3d 134 (9th Cir. 1994); United States v. Penny-Feeney, 773 F. Supp. at 228 (denying defendant's motion to suppress based on the use of a FLIR because she intentionally vented heat outside of her premises); State v. McKee, 510 N.W.2d 807, 810 (Wis. Ct. App. 1993) (finding that heat could be analogized to refuse left outside the house, and use of device was not offensive and entailed no embarrassment to or search of the person).

17. The current Fourth Amendment inquiry to determine if a constitutional violation occurred is derived from Justice Harlan's concurrence in *Katz v. United States.* Katz v. United States, 389 U.S. 347, 361 (1967) (Harlan, J., concurring). Justice Harlan suggested the rule that has "emerged from prior decisions is that there is a twofold requirement, first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'" *Id.* See *infra* Part II for a discussion concerning *Katz* and its progeny.

18. *See* United States v. Cusumano, 67 F.3d 1497 (10th Cir. 1995); United States v. Field, 855 F. Supp. at 1533. United States v. Ishmael, 843 F. Supp. 205, 213 (E.D. Tex. 1994), *rev'd,* 48 F.3d 850 (5th Cir.), *cert. denied,* 116 S. Ct. 74 (1995); State v. Young, 867 P.2d 593 (Wash. 1994). Although both *Ishmael* and *Field* have been overturned, they are still instrumental in their approach to the constitutional questions posed by the continued use of thermal imagers.

19. Katz v. United States, 389 U.S. 347 (1967).

telephone booth and recorded incriminating conversations by the defendant.[20] The Court rejected both the government's and defendant's contention that the question of a Fourth Amendment search turns on whether the phone booth was a "constitutionally protected area."[21] Rather, the Court concluded:

> [T]he Fourth Amendment protects people, not places. What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection. But what he seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected.[22]

Based on this reasoning, the Court concluded the defendant was justified in his expectation of privacy in the phone booth.[23] The government's recording, therefore, violated the defendant's Fourth Amendment rights.[24]

Although the majority decision in *Katz* provides the underpinnings of the current Fourth Amendment inquiry, Justice Harlan is credited for actually delineating the two-prong test. In his concurrence to *Katz*, Justice Harlan expressed that his "understanding of the rule that has emerged from prior decisions is that there is a twofold requirement, first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"[25]

B. *The* Katz *Analysis Applied to New Technology*

Although comprehension of the two-prong *Katz* analysis is necessary to understanding the constitutional issues of thermal imaging searches, it is also important to review how the United States Supreme Court has applied the test to cases involving the use of advanced technologies and sophisticated surveillance

---

20. *Id.* at 359. In *Katz*, Federal Bureau of Investigation agents attached an electronic listening and recording device to the outside of a public telephone booth from where the defendant was suspected to have been making illegal wagers. *Id.* at 348. After obtaining incriminating evidence as a result of the listening device, the government charged the defendant with transmitting wagering information by telephone from Los Angeles to Miami and Boston in violation of federal law. *Id.* At trial the government introduced portions of the defendant's conversations over defense objections. *Id.* The defendant was ultimately convicted on eight counts and appealed the lower court's ruling on the recorded conversations. *Id.* at 348-49. The "Court of Appeals rejected the contention that the recordings had been obtained in violation of the Fourth Amendment because '[t]here was no physical entrance into the area occupied by [the petitioner].'" *Id.* at 349 (citing Katz v. United States, 369 F.2d 130, 134 (9th Cir. 1966)).

21. Katz v. United States, 389 U.S. at 351.

22. *Id.* (citations omitted).

23. *Id.* at 352. The fact that the defendant used a phone booth constructed partly of glass was of no consequence to the Court's rationale. *Id.* The Court stated, "what [the defendant] sought to exclude when he entered the booth was not the intruding eye—it was the uninvited ear." *Id.* Further, the Court emphasized, "One who occupies [a phone booth], shuts the door behind him, and pays the toll that permits him to place a call is surely entitled to assume that the words he utters into the mouthpiece will not be broadcast to the world." *Id.*

24. *Id.* at 359.

25. *Id.* at 361 (Harlan, J., concurring).

methods. Of the numerous cases dealing with advanced technologies and their Fourth Amendment implications, the most applicable to the thermal imager is *Dow Chemical Co. v. United States.*[26]

In *Dow,* the Supreme Court held no constitutional violation occurred when the Environmental Protection Agency (EPA) used an aerial mapping camera to take photographs of the defendant's chemical plant.[27] Specifically, the Court found that Dow's 2000 acres "[were] not analogous to the 'curtilage' of a dwelling for purposes of aerial surveillance; such an industrial complex [was] more comparable to an open field and as such it [was] open to the view and observation of persons in [an] aircraft lawfully in the public airspace."[28] The Court based this conclusion on its holding in *California v. Ciraolo,*[29] a companion case to *Dow*.[30]

In *Ciraolo*, the Court refused to find a Fourth Amendment violation when officers flew over the defendant's property, in navigable airspace, to observe if he was cultivating marijuana.[31] Applying the test set out in *Katz,* the Court found that the defendant did have a subjective expectation of privacy, but this expectation was not one society was willing to accept as reasonable.[32]

> In an age where private and commercial flight in the public airways is routine, it is unreasonable for respondent to expect that his marijuana plants were constitutionally protected from being observed with the naked eye from an altitude of 1,000 feet. The Fourth Amendment simply does not require the police traveling in the public airways at this altitude to obtain a warrant in order to observe what is visible to the naked eye.[33]

In *Dow*, the Court emphasized that the EPA had not used any "unique sensory device . . . but rather a conventional, albeit precise, commercial camera commonly used in mapmaking."[34] The Court acknowledged, and the government conceded, that had the surveillance conducted by the EPA involved sophisticated surveillance equipment not generally available to the public, a

---

26. Dow Chem. Co. v. United States, 476 U.S. 227 (1986).

27. *Id.* at 239. In *Dow*, the EPA was denied a request for an on-site inspection of a 2000-acre chemical plant consisting of numerous covered buildings and outdoor manufacturing equipment. *Id.* at 229. After receiving Dow's refusal, the EPA did not seek an administrative warrant. *Id.* Rather, the EPA took photographs of the plant with an aerial mapping camera attached to the bottom of an aircraft. *Id.* After learning about the surveillance, Dow brought suit alleging that the EPA's actions violated the corporation's Fourth Amendment rights. *Id.* at 230.

28. *Id.* at 239. "[C]urtilage is the area to which extends the intimate activity associated with the 'sanctity of a man's home and the privacies of life.'" Oliver v. United States, 466 U.S. 170, 180 (1984) (quoting Boyd v. United States, 116 U.S. 616, 630 (1886)).

29. California v. Ciraolo, 476 U.S. 207 (1986).

30. Dow Chem. Co. v. United States, 476 U.S. at 234-35.

31. California v. Ciraolo, 476 U.S. at 215.

32. *Id.* In *Ciraolo*, the defendant had erected two fences that completely enclosed his property; the outer fence was six feet tall, and the inner fence was ten feet tall. *Id.* at 209.

33. *Id.* at 215.

34. Dow Chem. Co. v. United States, 476 U.S. at 238. The mapmaking cameras at issue in *Dow* would permit the EPA, with simple magnification, to identify wires as small as one-half of an inch thick. *Id.*

search warrant may have been required by the Fourth Amendment.[35] The majority believed, however, that the technology involved in this case did not rise to a level requiring constitutional review.[36] The majority suggested that the mere enhancement of the human vision in and of itself would not give rise to constitutional problems.[37] But, "electronic device[s] to penetrate walls or windows so as to hear and record confidential discussions of chemical formulae or other trade secrets would raise very different and far more serious questions."[38] Therefore, the Court concluded that although Dow may have taken numerous security measures to protect its plant,[39] this would not bar aerial photographs taken by the EPA from legally navigable airspace.[40]

In determining the constitutionality of the prewarrant use of thermal imagers, courts most often refer to the *Dow* Court's discussion and characterization of the surveillance—both in terms of the information gained and sophistication of equipment. Courts both in favor of and against the use of FLIRs, cite *Dow* in support of their conclusion. Specifically, courts which find the use of thermal imagers constitutional suggest that FLIRs, like aerial mapping cameras, are widely available and provide limited information.[41] In contrast, courts that find constitutional violations from the use of FLIRs note aerial mapping cameras, unlike thermal imagers, only improve a person's ability to see what has already been voluntarily exposed and viewable by the naked eye.[42]

---

35. *Id.* at 238. The dissent noted, however, that the camera used in this case was highly sophisticated because it could reveal minute details. *Id.* at 251 n.13 (Powell, J., concurring in part and dissenting in part). Further, the dissent rejected the argument that this technology was available to the public because it cost over $22,000. *Id.* at 250 n.12. It should be noted that thermal imager systems, like aerial mapping cameras, are highly expensive—some models cost as much as $100,000. Sharon McBreen, *Sheriff's Helicopters on Display Today*, ORLANDO SENTINEL, Dec. 21, 1995, at D3.

36. Dow Chem. Co. v. United States, 476 U.S. at 238.

37. *Id.*

38. *Id.* at 239.

39. *Id.* at 229. The Court acknowledged, "At all times, Dow has maintained elaborate security around the perimeter of the complex barring ground-level public views of these areas. It also investigates any low-level flights by aircraft over the facility." *Id.*

40. *Id.* at 239. Although not explicitly phrased in the terminology provided by *Katz*, the Court's opinion suggests that Dow had a subjective expectation of privacy that society would be unwilling to recognize. *Id.* at 230.

41. *See, e.g.*, United States v. Ford, 34 F.3d 992, 996 (11th Cir. 1994) ("Like the aerial photography in *Dow*, the thermal imagery at issue here appears to be of such low resolution as to render it incapable of revealing the intimacy of detail and activity protected by the Fourth Amendment.").

42. *See, e.g.*, United States v. Ishmael, 843 F. Supp. 205, 212 (E.D. Tex. 1994) (finding *Dow* inapplicable because the *Dow* Court explicitly noted surveillance of private property using highly sophisticated surveillance equipment might be constitutionally proscribed absent a warrant), *rev'd*, 48 F.3d 850 (5th Cir.), *cert. denied*, 116 S. Ct. 74 (1995).

III. JUDICIAL PRONOUNCEMENTS ON THE CONSTITUTIONALITY OF THE PREWARRANT USE OF FLIRS

A. *Courts Rejecting Constitutional Challenges to FLIRs*

Currently, four Federal Circuit Courts of Appeals—the Fifth, Seventh, Eighth, and Eleventh Circuits—have ruled that the prewarrant use of thermal imagers does not constitute a Fourth Amendment violation.[43] The case cited by most courts, however, in support of that proposition, is not a circuit court case, but the district court opinion in *United States v. Penny-Feeney*.[44] This case represents not only the first judicial determination on the constitutionality of such a search, but it also provides most of the justifications relied upon by courts in upholding the continued use of thermal imagers.

1. United States v. Penny-Feeney

In *Penny-Feeney*, police received information that the defendant had a large marijuana cultivation operation in her home.[45] The officers corroborated this information by flying over the property with a helicopter and taking a heat reading with an FLIR.[46] The court acknowledged that to the naked eye, the property appeared dark, "[b]ut with the use of the FLIR, the walls and areas of the garage showed up as bright white indicating that heat was escaping from the structure."[47] Based on the information received and the readings from the FLIR, the officers obtained a search warrant for the defendant's property.[48] Officers

---

43. *See* United States v. Ishmael, 48 F.3d 850 (5th Cir.), *cert. denied*, 116 S. Ct. 74 (1995); United States v. Myers, 46 F.3d 668 (7th Cir.), *cert. denied*, 116 S. Ct. 213 (1995); United States v. Ford, 34 F.3d 992 (11th Cir. 1994); United States v. Pinson, 24 F.3d 1056 (8th Cir.), *cert. denied*, 115 S. Ct. 664 (1994).

44. United States v. Penny-Feeney, 773 F. Supp. 220 (D. Haw. 1991), *aff'd on other grounds sub nom.* United States v. Feeney, 984 F.2d 1053 (9th Cir. 1993). Despite the trial court's holding in *Penny-Feeney*, the Ninth Circuit Court of Appeals has yet to determine whether the prewarrant use of FLIRs violates the Fourth Amendment. In affirming the lower court's decision in *Penny-Feeney*, the court concluded that probable cause existed independent of the FLIR readings to issue the search warrant. United States v. Feeney, 984 F.2d at 1056. As such, the court chose to "demonstrate the appropriate judicial restraint" and did not address whether the use of a FLIR violated the Fourth Amendment. *Id.* Similarly, other courts have chosen not to address the constitutional question if evidence other than the results of a thermal imager were sufficient to provide probable cause. *See, e.g.*, United States v. Olson, 21 F.3d 847, 849 (8th Cir. 1994); United States v. Casanova, 835 F. Supp. 702, 708 (N.D.N.Y. 1993). For cases approvingly citing *Penny-Feeney*, see United States v. Ford, 34 F.3d 992 (11th Cir. 1994); United States v. Pinson, 24 F.3d 1056 (8th Cir. 1994); United States v. Kyllo, 809 F. Supp. 787 (D. Or. 1992), *aff'd*, 26 F.3d 134 (1994), *aff'd in part and remanded in part*, 37 F.3d 526 (1994); State v. McKee, 510 N.W.2d 807, 808-09 (Wis. Ct. App. 1993).

45. United States v. Penny-Feeney, 773 F. Supp. at 222.

46. *Id.* at 223.

47. *Id.* at 223-24. The court noted that adjacent houses were also surveyed and did not reveal the same heat patterns. *Id.* at 224.

48. *Id.* at 224. In his affidavit the officer stated, "because the Penny/Feeney residence was emitting heat, the heat had to be generated artificially from within the residence, which would be

executed the warrant and found the large-scale indoor marijuana cultivation operation.[49] Prior to trial, the defendant moved to suppress the evidence, alleging that the use of the FLIR prior to obtaining a warrant violated her Fourth Amendment rights.[50] Applying the two-part test set out in *Katz*,[51] the court found no constitutional violation.[52]

a. *Heat-Waste.* First, the *Penny-Feeney* court suggested: "*Katz* mandates considerations of the FLIR's target in order to determine the object of defendants' asserted privacy interest."[53] In this regard, the court described the excess heat discernible with the use of the FLIR as "'heat waste,' or 'abandoned heat.'"[54] The court's conclusion was premised on the fact that the defendant did not attempt to prevent heat from escaping from the residence or exert dominion over it, but rather used equipment to vent heat to the outside of the premises.[55] As a result, the court concluded that the defendant did not have a subjective expectation of privacy in the heat waste given that she "voluntarily vented it outside the garage where it could be exposed to the public and in no way attempted to impede its escape or exercise dominion over it."[56]

Further, the district court opined that even if the defendant had a subjective expectation of privacy, it would not be an expectation society would be willing to recognize as reasonable.[57] In its holding, the court relied on *California v. Greenwood*,[58] in which the United States Supreme Court refused to find a reasonable expectation of privacy in a person's garbage left at a curbside.[59]

---

consistent with the presence of high intensity grow-lights and the indoor cultivation of marijuana." *Id.*

49. *Id.* As a result of the search, officers obtained:

> [A]pproximately 247 marijuana plants ranging from seedlings to mature plants six feet tall, ten one-thousand watt light bulbs, electric transformers, air conditioning units, an electric meter that had been altered to show a lower amount of electricity than was actually being consumed, drying lines for marijuana, a sophisticated drip irrigation system for the plants, and books and papers showing drug transactions.

Id.

50. *Id.* at 224-25.

51. *Id.* at 225-28; *see* Katz v. United States, 389 U.S. 347, 361 (1967) (Harlan, J., concurring).

52. United States v. Penny-Feeney, 773 F. Supp. at 227-28.

53. *Id.* at 225.

54. *Id.*

55. *Id.*

56. *Id.* at 226.

57. *Id.*

58. California v. Greenwood, 486 U.S. 35 (1987).

59. *Id.* at 37, 39-43. Other courts have found the use of thermal imagers analogous to the Supreme Court's decision in *Greenwood*. *See, e.g.*, United States v. Ford, 34 F.3d 992, 997 (11th Cir. 1994) (noting that heat vented from a mobile home was a "waste by product"); United States v. Pinson, 24 F.3d 1056, 1058 (8th Cir. 1994) (finding no reasonable expectation of privacy in heat which defendant voluntarily vented outside); State v. McKee, 510 N.W.2d 807, 809 (Wis. Ct. App. 1993) (noting that the difference between escaping heat and bagged garbage is a matter of degree). For a case upholding the prewarrant use of thermal imagers, but rejecting the garbage analogy, see United States v. Ishmael, 48 F.3d 850, 854 (5th Cir.), *cert. denied*, 116 S. Ct. 74 (1995).

In *Greenwood*, officers received information that the respondent was engaged in narcotics trafficking.[60] Through the course of investigation, the officers requested the neighborhood's trash collector pick up the plastic garbage bags left on the curb by Greenwood, and turn the bags over to them.[61] The officers then opened the bags and found evidence indicative of drug use.[62] The information obtained from the trash bags was included in the affidavit seeking a search warrant for the respondent's home.[63] The Supreme Court found that the respondent's Fourth Amendment claim failed because society would not accept an expectation of privacy in garbage as objectively reasonable.[64] The Court stated:

> It is common knowledge that plastic garbage bags left on or at the side of a public street are readily accessible to animals, children, scavengers, snoops, and other members of the public. Moreover, respondents placed their refuse at the curb for the express purpose of conveying it to a third party, the trash collector, who might himself have sorted through respondents' trash or permitted others, such as the police, to do so. Accordingly, having deposited their garbage "in an area particularly suited for public inspection, and in a manner of speaking, public consumption, for the express purpose of having strangers take it," respondents could have had no reasonable expectation of privacy in the inculpatory items that they discarded.[65]

Although the *Penny-Feeney* court acknowledged that differences exist between the garbage collected in *Greenwood* and heat waste, it refused to conclude that these differences warranted a different outcome.[66] Specifically, the court suggested:

> In *Greenwood*, the exposure was visual and the Court found that it was in no way diminished by the fact that the garbage was stored in opaque trash bags. Here, the exposure is heat-sensory and is no way diminished by the fact that the source of the heat could only be detected by the use of the FLIR.[67]

b. *The "Dog Sniff" Analogy.* The *Penny-Feeney* court supported its conclusion that the mere fact of the heat's invisibility was of no consequence by analogizing the use of thermal imagers to cases that have upheld the use of extra-

---

60. California v. Greenwood, 486 U.S. at 37.
61. *Id.*
62. *Id.* at 37-38.
63. *Id.* at 38.
64. *Id.* at 39-40.
65. *Id.* at 40 (citing United States v. Reicherter, 647 F.2d 397, 399 (3d Cir. 1981)).
66. United States v. Penny-Feeney, 773 F. Supp. 220, 226 (D. Haw. 1991), *aff'd on other grounds sub nom.* United States v. Feeney, 984 F.2d 1053 (9th Cir. 1993).
67. *Id.*

sensory, nonintrusive police investigative equipment.[68] In the court's view, the use of FLIRs is most analogous to the use of drug detection dogs.[69]

The court noted similarities between FLIRs and drug detection dogs, which makes their use nonviolative of the Fourth Amendment.[70] First, FLIRs, like drug detection dogs are inoffensive, creating no embarrassment to the person.[71] Second, heat emanations, like odors are not protected communications, but rather, are physical facts indicative of possible crime.[72]

c. *The Plain View Principle.* Furthermore, the court concluded use of a FLIR device from a helicopter to detect heat emanations from the walls of the structure did not invade the reasonable expectation of privacy in the curtilage of the home.[73] The court supported this result by citing *California v. Ciraolo*[74], which found no constitutional violation when an officer observed defendant's

---

68. *Id.* (upholding the use of a beeper in a container to track its movement despite Fourth Amendment challenge) (citing United States v. Knotts, 460 U.S. 276 (1983)); *see also* United States v. Place, 462 U.S. 696 (1983) (finding that "using a drug detection dog to sniff luggage at an airport [was] not a search"); Smith v. Maryland, 442 U.S. 735, 736 (1979) ("establishing a pen register with the phone company to ascertain what phone numbers were called by a private residence not held to be a search").

69. United States v. Penny-Feeney, 773 F. Supp. at 226. Other courts have similarly analogized the use of drug detection dogs to the use of FLIRs. *See, e.g.,* United States v. Ishmael, 48 F.3d 850, 855-56 (5th Cir.), *cert. denied*, 116 S. Ct. 74 (1995); United States v. Ford, 34 F.3d 992, 997 (11th Cir. 1994); United States v. Pinson, 24 F.3d 1056, 1058 (8th Cir. 1994); State v. McKee, 510 N.W.2d 807, 810 (Wis. Ct. App. 1993).

70. United States v. Penny-Feeney, 773 F. Supp. at 227 (citing United States v. Solis, 536 F.2d 880 (9th Cir. 1976)). In *United States v. Solis,* the Ninth Circuit held that the warrantless use of a drug detection dog was not an unconstitutional invasion of privacy. United States v. Solis, 536 F.2d 880, 883 (9th Cir. 1976). The court reasoned:

> The method used by the officers was inoffensive. There was no embarrassment to or search of the person. The target was a physical fact indicative of possible crime, not protected communications. We hold that the use of the dogs was not unreasonable under the circumstances and therefore was not a prohibited search under the [F]ourth [A]mendment.

Id. Similar justifications can be found in *United States v. Place*, 462 U.S. 696 (1983). In *Place*, the United States Supreme Court concluded that the use of drug detection dogs does not violate the Fourth Amendment. *Id.* at 707. The Court noted that the use of a trained dog does not require opening luggage, nor does it expose noncontraband items. *Id.*

> Thus, the manner in which information is obtained through this investigative technique is much less intrusive than a typical search. Moreover, the sniff discloses only the presence or absence of narcotics, a contraband item. . . . This limited disclosure also ensures that the owner of property is not subjected to the embarrassment and inconvenience entailed in less discriminate and more intrusive investigative methods.

Id. It should be noted, however, that the *Solis* court explicitly recognized that the use of drug detection dogs was valid under the Fourth Amendment for several reasons, including that "[n]o sophisticated mechanical or electronic devices were used." United States v. Solis, 536 F.2d at 882.

71. United States v. Penny-Feeney, 773 F. Supp. at 227.

72. *Id.*

73. *Id.* at 228.

74. California v. Ciraolo, 476 U.S. 207 (1986).

marijuana operation from an aircraft flying in public navigable airspace.[75] Rather than address the dissimilarity between *Ciraolo* and the present case—namely that in *Ciraolo* the officer's observations were made only with the naked eye—the *Penny-Feeney* court likened the cases, noting that each involved a helicopter flying in public navigable airspace over the defendant's property causing no "physical invasion of the home or curtilage."[76]

Having found that the defendant's constitutional claim had no supportable basis, the court denied the defendant's motion to suppress in its entirety.[77] As part of its opinion, the court noted, however, that even if the information from the FLIR had been obtained in violation of the defendant's rights, there was other substantial evidence for a judge to find probable cause to issue the warrant.[78] Interestingly, on appeal the reviewing court affirmed the *Penny-Feeney* decision solely on the basis that substantial evidence existed to issue the warrant despite the use of the FLIR.[79]

B. *Courts Finding the PreWarrant Use of FLIRs Constitutionally Offensive*

Despite the overwhelming number of cases to the contrary, several courts have found that the prewarrant use of FLIRs on private residences constitutes a violation of the Fourth Amendment.[80] Most notably the Tenth Circuit, in *United States v. Cusumano*,[81] became the first Federal Circuit Court of Appeals to find that such activity was unconstitutional.

---

75. United States v. Penny-Feeney, 773 F. Supp. at 227 (citing California v. Ciraolo, 476 U.S. 207 (1986)). See *supra* part II.B for a discussion of *Ciraolo*.

76. United States v. Penny-Feeney, 773 F. Supp. at 228.

77. *Id.* at 230.

78. *Id.*

79. United States v. Feeney, 984 F.2d 1053, 1056 (9th Cir. 1993). For a brief discussion of the *Feeney* decision, see *supra* text accompanying note 45. In *United States v. Kyllo*, 26 F.2d 134 (9th Cir. 1994), the Ninth Circuit again refused to address the constitutional question of the prewarrant use of FLIRs on private residences. In *Kyllo*, the court remanded the case so that explicit findings may be made from which the Ninth Circuit could properly determine whether the use of thermal imagers constitutes a search within the meaning of the Fourth Amendment. *Id.* at 531.

80. *See, e.g.*, United States v. Cusumano, 67 F.3d 1497, 1510 (10th Cir. 1995) (holding that the warrantless use of a thermal imager upon a home violates the Fourth Amendment); United States v. Field, 855 F. Supp. 1518, 1519 (W.D. Wis. 1994) (holding "that obtaining a thermal image of a residence is a search of that residence, requiring a warrant"), *overruled by* United States v. Myers, 46 F.3d 668 (7th Cir. 1995); United States v. Ishmael, 843 F. Supp. 205, 210-13 (E.D. Tex. 1994) (stating that absent an exception, a warrant is required for thermal imaging searches), *rev'd*, 48 F.3d 850 (5th Cir.), *cert. denied*, 116 S. Ct. 74 (1995); State v. Young, 867 P.2d 593, 598-99 (Wash. 1994) ("[The] use of the thermal detection devise to perform a warrantless, infrared surveillance violated the Washington State Constitution's protection of the defendant's private affairs.").

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

1. United States v. Cusumano

In *Cusumano,* the police used a thermal imager, prior to obtaining a warrant to search the defendants' home, and detected a large "hot spot" along one wall, as well as several hot spots along the roof and front door of the home.[82] This information was used by officers in order to obtain a search warrant for the defendants' home.[83] Upon execution of the warrant, police discovered a sophisticated indoor marijuana cultivation operation.[84] Before trial, the defendants moved to suppress the evidence obtained pursuant to the warrant because it was supported by the results of the thermal imager, a device that the defendants contended required the approval of a warrant.[85] After their motions were denied, the defendants entered a conditional plea of guilty and reserved their right to appeal the denial of their motions to suppress.[86]

After acknowledging several analogies advanced to support the prewarrant use of thermal imagers,[87] which the court described as "somewhat persuasive, if not altogether compelling[,]" the *Cusumano* court concluded that their "fellow circuits have misframed the relevant Fourth Amendment inquiry and, in so doing, have asked, and answered, the wrong question."[88] Specifically, the Tenth Circuit noted, "The pertinent inquiry is not, therefore, whether the Defendants retain an expectation of privacy in the 'waste heat' radiated from their home but, rather, whether they possess an expectation of privacy in the heat signatures of the activities, intimate or otherwise, that they pursue within their home."[89]

a. *Application of the* Katz *Test.* The *Cusumano* court opined the current *Katz* analysis,[90] as applied in decisions such as *Penny-Feeney*, fails because it focuses solely on heat waste and "ignore[s] both the purpose of the device and the manner in which it operates."[91] In this respect, the court opined that thermal imagers do not measure heat waste but rather heat differentials.[92] More importantly, however, was the court's observation pursuant to the laws of thermodynamics that these heat differentials, or the heat detectable on the exte-

---

82. *Id.* at 1499. The windows set into the wall from which the hot spot was detected was covered by a camper shell which prevented visual observation. *Id.*

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.* at 1502-08 (noting analogies to garbage searches approved in California v. Greenwood, 486 U.S. 35 (1988), the canine sniff found constitutional in United States v. Place, 462 U.S. 696 (1983), the pen register approved in Smith v. Maryland, 442 U.S. 735 (1979), and the constitutionality of aerial observations from navigable airspace dealt with in Florida v. Riley, 488 U.S. 445 (1989), California v. Ciraolo, 476 U.S. 207 (1986), and Dow Chemical Co. v. United States, 476 U.S. 227 (1986)).

88. *Id.* at 1500-01.

89. *Id.* at 1502.

90. The *Katz* analysis focuses first on whether a person exhibited a subjective expectation of privacy, and second whether society would be willing to recognize this expectation of privacy as reasonable. Katz v. United States, 389 U.S. 347, 361 (1967) (Harlan, J., concurring). See *supra* Part II for a further discussion concerning *Katz* and its progeny.

91. United States v. Cusumano, 67 F.3d at 1501.

92. *Id.*

rior of the home, are directly related to the amount of heat generated by sources within the home.[93] As such, the thermal imager indicates not only the presence or lack of heat, but also provides information concerning the occurrence of heat-generating activities within the targeted area.[94] Through analogy the court revealed the shortcomings of applying the *Katz* test as applied in jurisdictions finding no constitutional violation in the prewarrant use of FLIRs.[95] Turning to the facts of *Katz*, the Tenth Circuit determined that focusing only on the physical manifestation of an activity would have resulted in upholding the use of the recording device found unconstitutional in that case.[96] The court acknowledged,

> [T]he bug at issue in *Katz* was fixed to the outside of a public phone booth. Reduced to its operational fundamentals, that bug did not monitor the interior of the phone booth at all; rather, it measured the molecular vibrations of the glass that encompassed that interior. Alternatively, it might fairly be said that the bug passively recorded the propagation of waste vibrational energy into the public sphere.[97]

Thus, the government's use of waste heat in FLIR cases, similar to the government's use of waste vibrational energy, would not result in a constitutional violation because it "was simply a useful interpretation of abandoned energy."[98] Rather than apply an interpretation of *Katz* that would focus on "physical minutiae," the *Cusumano* court opted for an approach that looked not "to the tools employed by the government nor to the phenomena measured by those tools but to the object of the government's efforts."[99]

---

93. *Id.*

94. *Id.* The Washington Supreme Court reached a similar conclusion in *State v. Young*, 867 P.2d 593 (Wash. 1994) (en banc). In *Young*, the defendant successfully challenged the prewarrant use of a thermal imager on his property and the search warrant issued based on this surveillance. *Id.* at 595. The court concluded that the use of thermal imagers violated both the state and Federal constitutions. *Id.* at 601. Specifically, the court refused to focus solely on the heat readings, obtained by a thermal imager, focusing instead on the reality that heat readings, when combined with the government's interpretations, made officers privy to information "not otherwise lawfully obtain[able] about what is going on within the home." *Id.* at 599. The information, for example, could

> reflect a homeowner's financial inability to heat the entire home, the existence and location of energy consuming and heat producing appliances, and possibly even the number of people who may be staying at the residence on a given night. [Further,] [t]he device discloses information about activities occurring within the confines of the home, and which a person is entitled to keep from disclosure absent a warrant.

Id. at 598. For a detailed discussion of *Young* and its application under both the Washington State Constitution and the United States Constitution, see Melinda Foster, Note, *State v. Young: A Cool View Toward Infrared Thermal-Detection Devices*, 30 GONZ. L. REV. 135 (1994).

95. United States v. Cusumano, 67 F.3d at 1501.

96. *Id.*

97. *Id.*

98. *Id.*

99. *Id.* at 1502. The *Cusumano* court concluded that the object of the government's efforts in using thermal imaging devices is to monitor activities ongoing inside a structure that produce a heat signature. *Id*; *see also* State v. Young, 867 P.2d 593, 598 (Wash. 1994) (acknowledging that

b. *Effect of Failure to Take Adequate Precautions.* Applying the *Katz* test, the court determined that the defendants clearly had exhibited a subjective expectation of privacy "in the heat signatures of their domestic activities."[100] Specifically, the defendants grew the marijuana in the basement and covered its windows from observation.[101] On this point the government contended that the defendants could not successfully claim a subjective expectation of privacy because they did not take every effort to prevent the government's observation.[102] The *Cusumano* court disagreed, suggesting, as the Fifth Circuit had,[103] that defendants need not take every possible precaution as a prerequisite to claiming a subjective expectation of privacy.[104] The court opined, "To hold otherwise would leave the privacy of the home at the mercy of the government's ability to exploit technological advances: the government could always argue that an individual's failure (or inability) to ward off the incursions of the latest scientific innovation forfeits the protection of the Fourth Amendment."[105]

c. *Constitutional Significance of Abandoning Heat.* The *Cusumano* court summarily dismissed the government's allegation that the defendants had purposely vented the heat out of the home and thus could not have had a subjective expectation of privacy in the heat.[106] Although the court acknowledged, contrary to the findings of the district court, that the defendants probably vented the heat out of the home, it was reluctant to find this action sufficient to "forfeit the reasonable expectation of privacy traditionally accorded to the home."[107] To this end, the court acknowledged that the home, of all areas protected by the United States Constitution, is afforded the most stringent protection under the Fourth Amendment.[108] Several courts, however, have reached contrary conclusions,

---

although a thermal imager in function is targeted only on the outside of a home, it allows officers to "see through the walls" and draw specific inferences about the inside of the house).

100. United States v. Cusumano, 67 F.3d at 1502.

101. *Id.* It appears from the opinion that the windows were covered by a camper shell. *Id.* This camper shell may have served multiple purposes including covering an outlet pipe that the defendants used in order to vent heat out of the basement. *Id.* at 1503 n.9.

102. *Id.* at 1503.

103. *See, e.g.*, United States v. Ishmael, 48 F.3d 850, 854-55 (5th Cir.), *cert. denied*, 116 S. Ct. 74 (1995). Despite reversing a lower court decision finding the use of thermal imagers unconstitutional, the *Ishmael* court noted that "unless we intend to render *Katz*'s first prong meaningless, we must conclude that the Ishmaels exhibited a subjective expectation that their hydroponic laboratory would remain private." *Id.* at 854. To this end the court acknowledged that the defendants need not, in fact could not—given the laws of physics concerning heat emissions—take every precaution necessary to avoid detection by the police before a court may find a subjective expectation of privacy. *Id.* at 854-55. It should be noted the thermal imager in *Ishmael* was used on a structure in an open field which the court described as a business. *Id.* at 857. The court did not address whether the result would have been different had the structure been a home.

104. United States v. Cusumano, 67 F.3d at 1503.

105. *Id.*

106. *Id.* at 1502.

107. *Id.* at 1503.

108. *Id.* at 1502. In *Payton v. New York*, 445 U.S. 573, 590 (1980), for example, the United States Supreme Court concluded "the Fourth Amendment has drawn a firm line at the entrance to the house. Absent exigent circumstances, that threshold may not reasonably be crossed without a warrant." Similarly, in *Silverman v. United States*, 365 U.S. 505, 511 (1961), the Court suggested,

finding that defendants that voluntarily relinquish heat from their home cannot claim any subjective expectation of privacy.[109]

d. *Reasonable Expectation of Privacy?* Having determined that the defendants had a subjective expectation of privacy, the court turned to the second prong of *Katz*—whether society is willing to recognize this expectation of privacy as reasonable.[110] The *Cusumano* court concluded such an expectation was reasonable.[111]

e. *Intimacy of Information.* First, the court rejected the government's assertion that the information was not "sufficiently 'intimate' to give rise to a Fourth Amendment claim."[112] The court concluded that what makes thermal imagers constitutionally offensive is not that they record hot spots within a home, but rather, that the interpretation of that information allows the government to monitor the activities, whether mundane or not, that occur within a home.[113] It is at this point in the analysis that courts permitting the prewarrant use of thermal imagers are most at odds with those courts that preclude such use. This is because courts that find thermal imagers offensive refuse to accept police and prosecutor assertions that FLIRs provide little if any information regarding activities occurring within the home.[114] Rather, these courts, such as the court in *Cusumano*, acknowledge that very detailed information can be derived from proper interpretation of a thermal imager reading.[115] Such information can

---

"At the very core [of the Fourth Amendment] stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion."

109. *See, e.g.*, United States v. Penny-Feeney, 773 F. Supp. 220, 226 (D. Haw. 1991), *aff'd on other grounds sub nom.* United States v. Feeney, 984 F.2d 1053 (9th Cir. 1993); *see also* United States v. Robinson, 62 F.3d 1325, 1328-29 (11th Cir. 1995) (finding no subjective expectation of privacy when defendant failed to take affirmative action to prevent heat from being emitted into the atmosphere), *cert. denied*, 116 S. Ct. 1848 (1996); United States v. Ford, 34 F.3d 992, 994 (11th Cir. 1994) (concluding that defendant's conduct of purposely venting the heat out of his mobile home precluded a finding of a subjective expectation of privacy).

110. United States v. Cusumano, 67 F.3d at 1503.

111. *Id.* at 1506.

112. *Id.* at 1504. Several circuits have upheld the use of thermal imagers because the information gained did not rise to the level of a Fourth Amendment claim. *See, e.g.*, United States v. Myers, 46 F.3d 668, 670 (7th Cir. 1995); United States v. Ford, 34 F.3d 992, 996 (11th Cir. 1994); United States v. Pinson, 24 F.3d 1056, 1059 (8th Cir. 1994). The court in *State v. McKee*, 510 N.W.2d 807, 810 (Wis. Ct. App. 1993), went even further, holding that the information gained by the use of a thermal imager did not reveal "any of the inhabitants' activities within the walls of the house."

113. United States v. Cusumano, 67 F.3d at 1504.

114. In fact, several courts have taken issue with police and prosecutor suggestions that, on the one hand, thermal imagers can detect only minimal, if any, information of value, while on the other hand, use the thermal imager reading as justification upon which to issue a warrant. *See id.* at 1503 n.12 ("[I]t is somewhat disingenuous for the government to plead so forcefully the deficiencies of its machine while simultaneously averring that the output of that device is sufficiently reliable to support the warrant that issued."); United States v. Field, 855 F. Supp. 1518, 1531 (W.D. Wis. 1994) (rejecting the "notion that thermal imagers do not reveal activities that occur inside the home, [because] if this is so, then why does the government use thermal imagers to try to detect indoor marijuana growing operations?"), *overruled by* United States v. Myers, 46 F.3d 668 (7th Cir. 1995).

115. United States v. Cusumano, 67 F.3d at 1504.

include detecting a person through an open window leaning against a curtain, a person leaning against a relatively thin barrier such as a plywood door,[116] "the level of coffee in a cup, and tear ducts on a human face."[117] In light of this information, some courts have suggested that even sexual activities occurring within the home may be subject to government observation.[118] "Thus, while the imager cannot reproduce images or sounds, it nonetheless strips the sanctuary of the home of one vital dimension of its security: the 'right to be let alone' from the arbitrary and discretionary monitoring of our actions by government officials."[119]

f. *Rejecting Plain View.* The *Cusumano* court also found the plain view exception inapplicable in thermal imaging cases.[120] Generally, courts that categorize FLIR searches to be within the plain view doctrine conclude that the use of FLIRs to detect heat emanation from a home is different from an officer's plain view observations from an aircraft, which was previously upheld by the United States Supreme Court in *Ciraolo.*[121] The *Cusumano* court, however, distinguished aerial observation cases on the basis that individuals do not "knowingly expose" those activities that occur within the confines of their basement.[122] Moreover, the court noted that in the aerial observation cases the court's conclusion was premised on the officers' ability to view the illegal conduct with the naked eye or with the help of a conventional, commonly available camera.[123] In support of its conclusion, the court cited the United States Supreme Court's holding in *United States v. Karo,*[124] a decision overlooked by most courts that uphold the prewarrant use of thermal imagers.[125]

In *Karo,* the Supreme Court found that the use of a beeper contained in a canister of ether unconstitutional because it disclosed its location within the

---

116. State v. Young, 867 P.2d 593, 595 (Wash. 1994).

117. United States v. Field, 855 F. Supp. at 1531 (discussing training literature for thermal imager operators and their required level of efficiency).

118. United States v. Cusumano, 67 F.3d at 1503 n.11 ("It would take no great wit to speculate as to the origin of two mild hot spots commingled, in a bedroom at night."); United States v. Kyllo, 37 F.3d 526, 530-31 (9th Cir. 1994) (acknowledging the defendant's expert testimony that suggested thermal imagers can detect sexual activities occurring within a bedroom). If these devices can detect sexual activities, police officers theoretically could use them to detect violations of laws which prohibit homosexual intercourse, cunnilingus, and sodomy.

119. United States v. Cusumano, 67 F.3d at 1504.

120. *Id.* at 1507.

121. California v. Ciraolo, 476 U.S. 207, 213 (1986). For cases upholding the use of a FLIR at least partly pursuant to the plain view doctrine, see United States v. Ishmael, 48 F.3d 850, 856-57 (8th Cir.), *cert. denied*, 116 S. Ct. 74 (1995) and United States v. Penny-Feeney, 773 F. Supp. 220, 226 (D. Haw. 1991), *aff'd on other grounds sub nom.* United States v. Feeney, 984 F.2d 1053 (9th Cir. 1993).

122. United States v. Cusumano, 67 F.3d at 1507.

123. *Id.* at 1506.

124. United States v. Karo, 468 U.S. 705 (1984).

125. United States v. Cusumano, 67 F.3d at 1506. In fact, the Tenth Circuit acknowledged that its fellow courts cite *United States v. Knotts,* 460 U.S. 276 (1983), a case specifically distinguished by the United States Supreme Court in *Karo.* United States v. Cusumano, 67 F.3d at 1506 (citing United States v. Karo, 468 U.S. 705, 714-16 (1983)). For a discussion of the differences between *Karo* and *Knotts* see *infra* note 126 and accompanying text.

defendant's residence.[126] The Court concluded that the use of a beeper within the home is no different from an agent's warrantless entry into the home to verify that the ether was actually in the house.[127] As such, it required the same result, namely exclusion of evidence.[128] More importantly, however, the *Karo* Court concluded:

> The monitoring of an electronic device such as the beeper is, of course, less intrusive than a full-scale search, but it does reveal a critical fact about the interior of the premises that the Government is extremely interested in knowing and that it could not have otherwise obtained without a warrant.[129]

Likewise, the *Cusumano* court concluded that the use of the thermal imager on the defendant's residence disclosed a crucial fact of extreme interest to the government.[130] The court acknowledged that the information obtained through the use of the beeper, unlike the use of the thermal imager, was more precise and required minimal interpretation—this, however, was inconsequential.[131] Specifically, the court noted that the government's reliance on the information obtained inside the home through the use of a beeper to support the agent's belief that in all probability the home was being used for a marijuana operation, as well as the government's use of this information in order to obtain a search warrant, made any distinction a meaningless one.[132]

g. *Garbage Searches, Pen Registers, and Dog Sniffs.* Next, the Tenth Circuit rejected several analogies which had been used by other courts in

---

126. United States v. Karo, 468 U.S. at 716. Although the beeper had been in the canister for several months, the court only considered its use while inside the defendant's residence constitutionally significant. *Id.* at 713. This fact most clearly distinguishes *Karo* from the Supreme Court's prior decision in *United States v. Knotts*, 460 U.S. 276 (1983). In *Knotts*, the Court rejected a challenge to the use of a beeper placed within a chloroform container, which police officers believed would be used by the defendant to manufacture illicit drugs. *Id.* at 278. The officers in *Knotts* followed a car in which the canister containing the beeper was located after it had been purchased from the manufacturer, using both visual and electronic surveillance, until it arrived at a secluded cabin owned by the defendant. *Id.* Unlike *Karo*, the officers in *Knotts* did not attempt to verify the location of the canister within the cabin through the use of the beeper. *Id.* at 285. Thus, the Court concluded that no Fourth Amendment protection attached because the "surveillance conducted by means of the beeper in this case amounted principally to the following of an automobile on public streets and highways." *Id.* at 281. As such, the *Karo* case is not like *Knotts*, "for there the beeper told the authorities nothing about the interior of Knotts' cabin. The information obtained in Knotts was 'voluntarily conveyed to anyone who wanted to look . . . .'" United States v. Karo, 468 U.S. at 715 (quoting United States v. Knotts, 460 U.S. at 281).

127. United States v. Karo, 468 U.S. at 717.

128. *Id.* at 715.

129. *Id.*

130. United States v. Cusumano, 67 F.3d at 1508. For a similar result, see State v. Young, 867 P.2d 593, 602 (Wash. 1994) (en banc) (suggesting that the use of a thermal imager, like the beeper in *Karo*, conveyed information that was critical to the government from which inferences were drawn and that was relied heavily upon in order to obtain a warrant).

131. United States v. Cusumano, 67 F.3d at 1508 n.23.

132. *Id.*

upholding the prewarrant use of thermal imagers including garbage searches, pen registers, and dog sniffs.[133]

First, the court noted that in regard to the analogy between escaping heat and garbage, the characterization of escaping heat as "heat waste" is inapposite to their conclusions.[134] Nevertheless, the court found the analogy inappropriate because in *California v. Greenwood*,[135] where the United States Supreme Court permitted the search of a person's garbage, the Fourth Amendment inquiry turned on two factors: "the voluntary nature of the relinquishment of trash into the hands of third parties and the frequency with which people or animals rummage through curbside garbage bags."[136] By contrast, the *Cusumano* court determined, "It is neither common nor expected for homes to be scanned by thermal imagers."[137] Further, a person's lack of control over heat escaping from their home is not "'voluntary' within in the common use of that word," but rather is attributable to the laws of physics.[138] The court also found the analogy to a pen register inapplicable for the same reasons.[139] Namely, individuals neither anticipate their homes being subjected to thermal analysis, nor do they voluntarily disclose the heat signatures to the public.[140]

Furthermore, the court found the analogy between dog sniffs and FLIRs to be meritless.[141] This conclusion was premised not on how either the dog or the thermal imager obtains the information because each "extracts information . . . [about] an object solely from an analysis of external physical phenomena."[142] Rather, the distinguishing difference arises from the type of information the dog or FLIR provide.[143] Specifically, a drug dog can detect only the presence of ille-

---

133. *Id.* at 1508.

134. *Id.*

135. California v. Greenwood, 486 U.S. 35 (1987).

136. United States v. Cusumano, 67 F.3d at 1508 (citing California v. Greenwood, 486 U.S. 35, 40-41 (1987)).

137. *Id.*

138. *Id.* *Webster's Dictionary* defines voluntary as "[a]rising from one's own free will" or "acting on one's own initiative." WEBSTER'S II NEW RIVERSIDE UNIVERSITY DICTIONARY 1294 (1984). The court suggested:

> Heat loss and heat conduction (or radiation) obey the laws of physics and are not phenomena over which an individual customarily exerts control. An individual no more chooses to have his or her home emit infrared radiation than she or he chooses to absorb or reflect visible light, but we have never heard the process of sight described in terms of abandoned photons.

United States v. Cusumano, 67 F.3d at 1508 (citing State v. Young, 867 P.2d 593, 602-03 (Wash. 1994)). The court in *Young*, also acknowledged that unlike garbage, heat automatically leaves a person's home without any deliberate participation by the homeowner. State v. Young, 867 P.2d 593, 602 (Wash. 1994). Further, the *Cusumano* court also noted that, to the extent that individuals can prevent heat loss, they generally do this by insulating their homes, as was likely done by the defendants. United States v. Cusumano, 67 F.3d at 1508 n.24.

139. United States v. Cusumano, 67 F.3d at 1508 (citing Smith v. Maryland, 442 U.S. 735 (1979)).

140. *Id.*

141. *Id.* (citing United States v. Place, 462 U.S. 696 (1983)).

142. *Id.*

143. *Id.*

gal drugs.[144] By contrast, a thermal imager "reveal[s] information about conduct or activity that an individual has a right to pursue."[145] The court also noted that unlike using a drug detection dog on a suitcase, as was done in *United States v. Place*,[146] the thermal imager in the case at bar was used on a home.[147] In this context, the court suggested that the use of drug detection dogs without a warrant would be violative of the Fourth Amendment.[148]

Although the defendants in *Cusumano* won the constitutional battle, they lost the war. The Tenth Circuit affirmed their convictions, concluding the warrant, when viewed without the tainted information, still contained sufficient evidence to provide probable cause upon which to issue the warrant.[149]

IV. CONCLUSION

Future courts dealing with the constitutionality of the prewarrant use of thermal imagers will not depend on analogies to garbage searches, dog sniffs, or aerial observations. Rather, they must ask what information the thermal imagers reveal. The answer is clear. When properly interpreted, FLIRs can disclose the most mundane facts, such as the presence of a heater in a home, as well as the

---

144. *Id.* A dog's unique ability to detect only the presence of drugs was a key reason for the Supreme Court's ruling in *United States v. Place*, 462 U.S. 696 (1983). "In this respect," the Court noted, "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.* at 707.

145. United States v. Cusumano, 67 F.3d at 1508. Thus, the thermal imager is "far less discriminating in its ability to identify illegal activity, and it empowers the government to detect a vast array of innocent conduct." *Id.* at 1508-09. For a thorough discussion of *Place* see Hope Walker Hall, Comment, *Sniffing Out the Fourth Amendment: United States v. Place—Dog Sniffs—Ten Years Later*, 46 ME. L. REV. 151 (1994) (suggesting that the Supreme Court revisit its decision in *Place* and acknowledge that the use of a drug-sniffing canine constitutes a search under the Fourth Amendment).

146. United States v. Place, 462 U.S. 696 (1983).

147. United States v. Cusumano, 67 F.3d at 1508-09.

148. *Id.* at 1509 (citing United States v. Thomas, 757 F.2d 1359, 1367 (2d Cir. 1985)). In *Thomas*, the Second Circuit held that the prewarrant use of a trained police dog on a private residence to determine the presence of illegal narcotics—information they would be unable to obtain through the use of their own senses—violates the Constitution. United States v. Thomas, 757 F.2d 1359, 1367 (2d Cir. 1985). The court opined:

> Thus, a practice that is not intrusive in a public airport may be intrusive when employed at a person's home. Although using a dog sniff for narcotics may be discriminating and unoffensive relative to other detection methods, and will disclose only the presence or absence of narcotics, it remains a way of detecting the contents of a private enclosed space. . . . Consequently, the officers' use of a dog is not a mere improvement of their sense of smell, as ordinary eyeglasses improve vision, but is a different, and far superior, sensory instrument.

Id. at 1366-67. Further, the court determined that unlike a canine sniff on a piece of luggage located in a public place, which receives no Fourth Amendment protection, the defendant's home receives a heightened expectation of privacy, which is violated by the prewarrant use of a drug detection canine. *Id.* at 1367.

149. *Id.*

most intimate activities, such as sexual intercourse. It cannot be seriously doubted that governmental access to this kind of information from within the home is precisely the reason the framers of the Bill of Rights penned the Fourth Amendment.

Through naïveté or manipulation, several courts have focused only on the information that the thermal imager actually provides—namely, temperature differentials. That focus, however, fails to address what this information actually reveals once properly interpreted. If courts focused both on the means and the ends attached to prewarrant searches conducted with the aid of FLIRs, it is clear that they would find a Fourth Amendment violation. Furthermore, it should be acknowledged that technology does not remain stagnant but is ever advancing. With research, corporations will, no doubt, enhance the capabilities of thermal imagers—making human interpretation less necessary, while improving the accuracy of surveillance.[150]

As the war on drugs continues, there is no doubt that requiring a warrant prior to using a thermal imager on a person's home would effectively eliminate FLIRs from the law enforcement arsenal.[151] This drawback, however, is due to the protections provided by the Fourth Amendment to the citizens of the United States. Abridging of law enforcement surveillance power is not detrimental to the people's interests. Rather, it is necessary to maintain the importance placed upon our privacy, a right assured under the Fourth Amendment.

Omar Ortega

---

150. *See FLIR to Acquire Image Analysis Software Company,* NDT Update, Nov. 1, 1995 (confirming FLIR Systems, Inc., is acquiring Optimas Corp., an image analysis software company, in order to develop "computer software products that enable image utilization and analysis").

151. Specifically, by requiring police to obtain a warrant to gain information that they would generally use in order to support a warrant, the benefit of using a thermal imager is drastically reduced.