COMMENT

TAKING IT TO THE STREETS: UNCOVERING THE SECRET MOBILIZATION OF BACKSCATTER X-RAY TECHNOLOGY AND THE CONCERNS SURROUNDING ITS USE*

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I. INTRODUCTION

Since the ratification of the Bill of Rights in 1791,[1] the Fourth Amendment has provided protection against unreasonable searches and seizures by the government.[2] In recent years, however, advances in technology have "[made] it possible for government agents and private persons to penetrate the privacy of homes, offices, and vehicles," "rais[ing] troubling implications for individual privacy."[3]

One such technology, backscatter X-ray imaging, uses a low-level X-ray that is capable of seeing through objects and creating a photo-like image of the object being scanned.[4] The technology's presence at airports received endless media attention and even spurred several lawsuits.[5] Shockingly, the same controversial technology has gone largely undetected on America's streets in the form of covert Z Backscatter Vans (ZBVs).[6]

Following the terrorist attacks of September 11, 2001, the Transportation Security Administration (TSA) began implementing Advanced Imaging Technology (AIT) in 2007 to increase airport

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1. Thomas Y. Davies, *Recovering the Original Fourth Amendment*, 98 MICH. L. REV. 547, 557 (1999).

2. U.S. CONST. amend. IV. The Fourth Amendment's protection against unreasonable searches and seizures applies to the states through the Due Process Clause of the Fourteenth Amendment. Mapp v. Ohio, 367 U.S. 643, 655 (1961).

3. ALAN F. WESTIN, PRIVACY AND FREEDOM 365 (1967); Russell L. Weaver, *The Fourth Amendment, Privacy and Advancing Technology*, 80 MISS. L.J. 1131, 1131, 1136 (2011).

4. *See infra* Part III.A (discussing how backscatter X-ray imaging works).

5. Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Sec., 653 F.3d 1, 3–4 (D.C. Cir. 2011); Roberts v. Napolitano, 798 F. Supp. 2d 7, 9 (D.D.C. 2011); Durso v. Napolitano, 795 F. Supp. 2d 63, 65–66 (D.D.C. 2011); *see also infra* Part III.B.2 (discussing the media frenzy and lawsuits that accompanied the introduction of backscatter X-ray imaging in airports).

6. *See* Michael Grabell, *Drive-By Scanning: Officials Expand Use and Dose of Radiation for Security Screening*, PROPUBLICA (Jan. 27, 2012), http://www.propublica.org/article/drive-by-scanning-officials-expand-use-and-dose-of-radiation-for-security-s (stating that ZBVs are "designed for covert use," and discussing reports of domestic use of ZBVs by law enforcement); *see also infra* Part IV.A (discussing the largely undetected presence of backscatter X-ray technology on the streets).

security.[7] The TSA utilizes two different types of AIT: millimeter wave and backscatter X-ray imaging.[8] Both types of AIT are utilized via walk-through body scanners.[9] As the TSA ramped up its use of the technology in airports in late 2010, public outcry over the invasive nature of the technology was almost immediate.[10] Ultimately, criticism led numerous major airports to replace the controversial scanners with less invasive scanners that provide "cartoon-like images" of airplane passengers.[11]

In the midst of the controversy surrounding backscatter X-ray imaging at airports, the same technology was mobilized and subtly deployed on America's streets.[12] However, unlike backscatter X-ray imaging at the airport, the technology's presence outside of the

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7. *See Elec. Privacy Info. Ctr.*, 653 F.3d at 3; *see also* Tobias W. Mock, Comment, *The TSA's New X-Ray Vision: The Fourth Amendment Implications of "Body-Scan" Searches at Domestic Airport Security Checkpoints*, 49 SANTA CLARA L. REV. 213, 215–16, 226 (2009) (discussing the creation of the TSA after 9/11 and its utilization of backscatter technology). Use and development of AIT by the TSA occurred in response to Congress' demand that the Department of Homeland Security "give a high priority to developing, testing, improving, and deploying, at airport screening checkpoints," technology that could detect "nonmetallic, chemical, biological, and radiological weapons, and explosives, in all forms, on individuals and in their personal property." Intelligence Reform and Terrorism Prevention Act of 2004 § 4013(a), 49 U.S.C. § 44925(a) (2006).

8. *AIT: How It Works*, TRANSP. SEC. ADMIN., http://www.tsa.gov/ait-how-it-works (last updated Sept. 25, 2013); *Fact Sheet: Advanced Imaging Technology (AIT) Health & Safety*, OFFICE OF HEALTH AFFAIRS, U.S. DEP'T OF HOMELAND SEC., http://www.tsa.gov/sites/default/files/assets/pdf/ait_fact_sheet.pdf (last visited Nov. 17, 2013).

9. *See Elec. Privacy Info. Ctr.*, 653 F.3d at 3 (explaining that the imaging process requires individuals to stand in the scanner for several seconds); *AIT: How It Works*, *supra* note 8.

10. *See* Marnie Hunter, *Airport Body-Scan Radiation Under Scrutiny*, CNN (Nov. 12, 2010), http://www.cnn.com/2010/TRAVEL/11/12/body.scanning.radiation/index.html?_s=PM:TRAVEL; *National Outcry over TSA Body Scanners and Invasive Pat-Downs*, DEMOCRACY NOW! (Nov. 19, 2010), http://www.democracynow.org/2010/11/19/national_outcry_over_tsa_body_scanners.

11. *See* Darren Booth, *Major Airports to Remove Invasive X-Ray, Body Scanners*, CNBC (Oct. 23, 2012), http://www.cnbc.com/id/49517858/Major_Airports_to_Remove_Invasive_Xray_Body_Scanners (discussing the TSA's decision to remove the body scanners from major airports); Hugo Martin, *LAX's Controversial Full-Body Scanners Out; New, Faster Scanners In*, L.A. TIMES (Oct. 22, 2012), http://articles.latimes.com/2012/oct/22/business/la-fi-lax-scanners-20121023 (discussing the TSA's decision to replace "full-body scanners that have been criticized for creating potential health risks and privacy violations").

12. *See* Andy Greenberg, *Full-Body Scan Technology Deployed in Street-Roving Vans*, FORBES (Aug. 24, 2010), http://www.forbes.com/sites/andygreenberg/2010/08/24/full-body-scan-technology-deployed-in-street-roving-vans/ (discussing how the same technology found in airports, which is "capable of seeing through clothes and walls, has also been rolling out on U.S. streets"); *see also infra* Part IV (discussing the presence of covert backscatter technology on the streets).

airport has gone largely unnoticed.[13] Accordingly, it has received far less media attention.[14]

A lack of public awareness of ZBVs, a technology that has been described as "one of the most intrusive technologies conceivable,"[15] threatens individuals' Fourth Amendment rights by creating the potential for abuse through surreptitious searches without a warrant or probable cause.[16]

This Comment addresses the issue of mobilized backscatter technology, specifically focusing on police use of ZBVs on automobiles—a constitutionally protected area where ZBVs have recently been used.[17] Part II provides a historical discussion of the Fourth Amendment and how it has evolved in light of advancing technology. Part III discusses how backscatter technology works and how it has been used to bolster national security at the airport and along the border. Part IV describes the incidence of backscatter technology on the streets and its dangerous implications. Lastly, Part V offers potential solutions to remedy the concerns raised by covert, warrantless use of ZBVs. This Comment argues that the inherently covert nature of ZBVs must be stripped away, thereby increasing public awareness and lessening the potential for abuse and circumvention of individuals' Fourth Amendment rights.

II. EVOLUTION OF FOURTH AMENDMENT ANALYSIS

Congress adopted the Fourth Amendment in 1789, and the states ratified it in 1791 as part of the Bill of Rights.[18] The Fourth Amendment guarantees, "[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures . . . ."[19] Courts constantly revisit the protections guaranteed by the Fourth Amendment as a result of advancing technologies.[20]

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13. *See infra* Part IV.B (discussing the covert nature of the technology).

14. *See infra* Part IV.B (discussing the lack of public awareness of the technology).

15. Greenberg, *supra* note 12 (quoting Marc Rotenberg, Executive Director of the Electronic Privacy Information Center).

16. *See* U.S. CONST. amend. IV (requiring the government to obtain a warrant, supported by probable cause, before conducting a search or seizure); *see also infra* Part IV.D (discussing the implications of covert use of ZBVs).

17. For a discussion regarding police use of a similar technology designed to allow police to detect concealed weapons on persons, see generally Alyson L. Rosenberg, Comment, *Passive Millimeter Wave Imaging: A New Weapon in the Fight Against Crime or a Fourth Amendment Violation?*, 9 ALB. L.J. SCI. & TECH. 135, 136 (1998).

18. Davies, *supra* note 1, at 557.

19. U.S. CONST. amend. IV.

20. *See* Weaver, *supra* note 3, at 1136–37 (discussing the history behind the Fourth Amendment and how the law has responded to "[t]he steady onslaught of technology" that has "raised troubling implications for individual privacy"); *see also* Olmstead v. United

*A. Pre-*Katz *and the Trespass Doctrine*

Early U.S. Supreme Court decisions confronting the issue of advancing technology and the Fourth Amendment adhered to traditional concepts of trespass.[21] This early view of the Fourth Amendment grew from the common law belief that "the eye cannot by the laws of England be guilty of a trespass."[22] Essentially, a violation of an individual's Fourth Amendment rights only occurred if a *physical* trespass was committed.[23]

As a result, the Supreme Court held in *Goldman v. United States* that federal agents did not violate the Fourth Amendment when the agents used a detectaphone, a through-the-wall listening device, to eavesdrop on a conversation in an adjacent room.[24] Similarly, in *Olmstead v. United States*, the Court held that evidence obtained through wiretaps regarding an illegal conspiracy to buy and sell liquor did not constitute a Fourth Amendment search because government agents did not trespass upon the defendants' property when the agents installed wiretaps to monitor conversations taking place within the property boundaries of the defendants.[25]

The Court's early reliance on the "trespass doctrine" to define the scope of the Fourth Amendment resulted from the belief that the Fourth Amendment should be "construed in the light of what was deemed an unreasonable search and seizure when it was adopted."[26] Of course, an unreasonable search and seizure could not have included the use of wiretaps or

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States, 277 U.S. 438, 455 (1928) (wiretaps); Goldman v. United States, 316 U.S. 129, 131, 135 (1942) (detectaphone); Silverman v. United States, 365 U.S. 505, 506, 508 (1961) (spike mike); Katz v. United States, 389 U.S. 347, 348–49 (1967) (microphone attached to a phone booth); Kyllo v. United States, 533 U.S. 27, 29 (2001) (thermal imager); United States v. Jones, 132 S. Ct. 945, 948 (2012) (GPS tracking device).

21. *See Olmstead*, 277 U.S. at 466 (explaining that Fourth Amendment violations had not been found in previous cases "unless there ha[d] been an official search and seizure of [a defendant's] person . . . or an actual physical invasion of his house").

22. *See* Boyd v. United States, 116 U.S. 616, 626–28 (1886) (quoting Entick v. Carrington, 19 Howell's State Trials 1029, 1066 (C.P. 1765), 95 Eng. Rep. 807) (internal quotation marks omitted) (positing that then-existing English notions of freedom influenced the creation of the Fourth Amendment).

23. *See Olmstead*, 277 U.S. at 466; *see also* Anthony G. Amsterdam, *Perspectives on the Fourth Amendment*, 58 MINN. L. REV. 349, 356–57 (1974) (discussing how prior Supreme Court and lower court decisions "commonly used the concept of 'a constitutionally protected area'" to define the scope of the Fourth Amendment's protections (quoting *Silverman*, 365 U.S. at 512)).

24. *Goldman*, 316 U.S. at 131, 135–36.

25. *Olmstead*, 277 U.S. at 455–56, 464–66.

26. *Id.* at 464–66 (quoting Carroll v. United States, 267 U.S. 132, 149 (1925)); Weaver, *supra* note 3, at 1140 (explaining how the focus on material things served as the foundation for the trespass doctrine).

detectaphones when the Framers drafted the Bill of Rights.[27] At that time, "the state of surveillance technology was relatively crude and simplistic . . . ."[28] Indeed, "[t]he Framers of the Fourth Amendment could not have envisioned the extent to which technology would reshape society in the following centuries."[29]

The Court's commitment to a Fourth Amendment interpretation sounding in originalism did not go unchallenged. Most notably, Justice Brandeis advocated for a broader interpretation of the Fourth Amendment to protect personal privacy, arguing that, "[i]n the application of a constitution, our contemplation cannot be only of what has been but of what may be."[30]

Years later, a dissenting Justice Murphy continued Justice Brandeis's call for a broader interpretation of the Fourth Amendment.[31] Justice Murphy conceded that a literal reading of the Fourth Amendment appeared to require a trespassory invasion for a violation to occur.[32] However, he went on to opine that, "it has not been the rule or practice of this Court to permit the scope and operation of broad principles ordained by the Constitution to be restricted, by a literal reading of its provisions, to those evils and phenomena that were contemporary with its framing."[33] Justice Murphy noted that the "conditions of modern life" had greatly expanded the range of activities that required protection from government intrusion.[34] He argued it was the Court's duty to preserve this protection.[35] Foreseeing a future of perpetually advancing technology, Justice Murphy charged the Court to give the Fourth Amendment "a construction sufficiently liberal and elastic to make it serve the needs and manners of each succeeding generation."[36]

Nineteen years after *Goldman*, the Court had its next opportunity to heed the words of Justices Brandeis and Murphy

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27. *See* Weaver, *supra* note 3, at 1138 ("[W]hen the Fourth Amendment was drafted and ratified, the state of surveillance technology was relatively crude and simplistic . . . . [Early Americans] could hardly have envisioned the surveillance technologies that would be developed later.").

28. *Id.*

29. *Id.* at 1133.

30. *Olmstead*, 277 U.S. at 472, 474, 478 (Brandeis, J., dissenting) (quoting Weems v. United States, 217 U.S. 349, 373 (1910)) (internal quotation marks omitted).

31. *See* Goldman v. United States, 316 U.S. 129, 138 (1942) (Murphy, J., dissenting).

32. *See id.*

33. *Id.*

34. *Id.*

35. *Id.*

36. *Id.*

in *Silverman v. United States*.[37] The *Silverman* case involved evidence obtained using a "spike mike," which allowed officers to obtain information from within the house occupied by the defendants without physically entering the property.[38] However, the Court distinguished the case from *Olmstead* and *Goldman*, avoiding the opportunity to overrule their prior decisions.[39] The microphone at issue in *Silverman* made contact with and conducted sound through a heating duct that ran throughout the house the defendants occupied.[40] As a result, the Court found that the microphone intruded into the house and created "an unauthorized physical penetration into the premises."[41] This eliminated any need for the Court to revisit their prior rulings.[42]

However, the *Silverman* Court acknowledged their growing concern for the potential erosion of privacy rights due to the "frightening paraphernalia which the vaunted marvels of an electronic age may visit upon human society."[43] Six years later, the Court was given an opportunity to revisit the Fourth Amendment's applicability to advancing technology in *Katz v. United States*, a case that resulted in a "dramatic paradigm shift."[44]

B. Katz *and the "Reasonable Expectation of Privacy" Test*

After years of grappling with a literal interpretation of the Fourth Amendment's protection against "unreasonable searches" and the worrisome consequences hinted at by Justices Brandeis and Murphy, the Court's decision in *Katz*

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37. Silverman v. United States, 365 U.S. 505, 508 (1961); *see Goldman*, 316 U.S. at 138 (Murphy, J., dissenting) (encouraging a liberal interpretation of the Fourth Amendment); Olmstead v. United States, 277 U.S. 438, 474, 478 (1928) (Brandeis, J., dissenting) (promoting a broad and evolving interpretation of the Fourth Amendment). For a chronological discussion of major Fourth Amendment decisions relating to technology, see Weaver, *supra* note 3, at 1147.

38. *Silverman*, 365 U.S. at 506. The "spike mike" was a microphone with a foot-long spike attached to it. *Id.* The spike was inserted under a baseboard and made contact with a heating duct, "converting [the] entire heating system into a conductor of sound." *Id.* at 506–07.

39. *See id.* at 509–12 (noting that neither *Olmstead* nor *Goldman* involved a physical trespass, while the officers in the case at bar "overheard the petitioners' conversations only by usurping part of the petitioners' house or office").

40. *Id.* at 506–07.

41. *Id.* at 509.

42. *Id.* at 509, 512.

43. *Id.* at 509.

44. Katz v. United States, 389 U.S. 347, 353–54 (1967); Courtney E. Walsh, *Surveillance Technology and the Loss of Something a Lot Like Privacy: An Examination of the "Mosaic Theory" and the Limits of the Fourth Amendment*, 24 ST. THOMAS L. REV. 169, 184 (2012).

"tied the Fourth Amendment to normative notions of individual privacy."[45]

Katz involved evidence obtained by the government using a microphone attached to the exterior of a phone booth that the defendant frequently used.[46] This enabled the government to record the defendant's private conversations without physically entering the phone booth.[47] Because there was no physical intrusion into the phone booth, the existing precedent of *Olmstead* and *Goldman* appeared to indicate that the government had not conducted a "search" as defined by the Fourth Amendment.[48] However, the Court acknowledged that the "underpinnings of *Olmstead* and *Goldman* [had] been so eroded by [their] subsequent decisions that the 'trespass' doctrine . . . [could] no longer be regarded as controlling."[49]

As a result, the Court expressly overruled its previous decisions that focused on constitutionally protected areas and instead declared that the Fourth Amendment "protects people, not places."[50] Thus, the Court found that the government's use of the microphone outside of the phone booth constituted an unconstitutional "search" because it "violated the privacy upon which [the defendant] justifiably relied while using the telephone booth."[51]

Interestingly, the standard courts use today to determine whether a "search" has occurred comes from Justice Harlan's concurrence.[52] Harlan's understanding of the Fourth Amendment's protection against unreasonable searches and seizures involved "a twofold requirement, first that a person have

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45. *See* Walsh, *supra* note 44, at 187 (noting that the *Katz* Court was more concerned with individual privacy expectations than the traditional trespass doctrine).

46. *Katz*, 389 U.S. at 348.

47. *Id.* at 348–49.

48. *See id.* at 352–53 (discussing the government's argument in light of the precedent set forth by *Olmstead* and *Goldman*).

49. *Id.* at 353.

50. *Id.* at 351, 353 ("We conclude that the underpinnings of *Olmstead* and *Goldman* have been so eroded by our subsequent decisions that the 'trespass' doctrine there enunciated can no longer be regarded as controlling.").

51. *Id.* at 353.

52. *See id.* at 361 (Harlan, J., concurring) (advocating a two-pronged test that asks whether an individual had a subjective expectation of privacy and whether that expectation was objectively reasonable); *see also* United States v. Jacobsen, 466 U.S. 109, 113, 122 (1984) (stating that for the purpose of invoking the Fourth Amendment, "[a] 'search' occurs when an expectation of privacy that society is prepared to consider reasonable is infringed"); Smith v. Maryland, 442 U.S. 735, 740 (1979) ("[T]he application of the Fourth Amendment depends on whether the person invoking its protection can claim a 'justifiable,' a 'reasonable,' or a 'legitimate expectation of privacy' that has been invaded by government action.").

exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"[53] Thus, "[u]nder the *Katz* approach, each case must be evaluated on its own facts."[54]

Early commentators viewed the Court's "reasonable expectation of privacy" test with optimism, believing it would increase protection of individual privacy.[55] More recent commentators, however, have become critical of the test in light of its ambiguous framework and difficult application.[56]

This Comment will focus on the Fourth Amendment as it relates to mobilized backscatter technology used on automobiles. Based on prior Supreme Court decisions dealing with analogous technologies and the fact that backscatter technology has been described as "one of the most intrusive technologies conceivable,"[57] use of backscatter technology on automobiles, without a warrant or probable cause, is a clear violation of the Fourth Amendment.[58]

C. Sense-Enhancing Technology and the Home

Kyllo v. United States involved one of the more recent issues the Court has faced regarding police use of sophisticated, sense-enhancing technology.[59] In *Kyllo*, the technology at issue was a thermal image scanner used to "detect infrared radiation, which virtually all objects emit but which is not visible to the naked

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53. *Katz*, 389 U.S. at 361 (Harlan, J., concurring).

54. Weaver, *supra* note 3, at 1152.

> Thus a man's home is, for most purposes, a place where he expects privacy, but objects, activities, or statements that he exposes to the 'plain view' of outsiders are not 'protected' because no intention to keep them to himself has been exhibited. On the other hand, conversations in the open would not be protected against being overheard, for the expectation of privacy under the circumstances would be unreasonable.

Katz, 389 U.S. at 361 (Harlan, J., concurring).

55. *See* Amsterdam, *supra* note 23, at 385 ("As a doctrinal matter, it seems clear that the effect of *Katz* is to expand rather than generally to reconstruct the boundaries of [F]ourth [A]mendment protection."); Weaver, *supra* note 3, at 1553–54 ("When it was initially decided, *Katz* might have been regarded as a hopeful decision for individual freedom . . . .").

56. *See* Orin S. Kerr, *The Fourth Amendment and New Technologies: Constitutional Myths and the Case for Caution*, 102 MICH. L. REV. 801, 808–09 (2004) ("Part of the problem is that the [reasonable expectation of privacy] test is largely circular . . . ."); Weaver, *supra* note 3, at 1154 ("The Court simply did not develop a workable framework for determining whether a [reasonable expectation of privacy] exists, or for determining how the [reasonable expectation of privacy] test should be applied to new technologies.").

57. Greenberg, *supra* note 12.

58. *See infra* Part II.D (discussing the Fourth Amendment as applied to automobiles).

59. Kyllo v. United States, 533 U.S. 27, 29 (2001).

eye."[60] An agent for the U.S. Department of the Interior suspected that the defendant, Danny Kyllo, was growing marijuana inside his home.[61] "Indoor marijuana growth typically requires [the use of] high-intensity lamps" that emit large amounts of heat.[62] While sitting in the passenger seat of a patrol car parked on a public street, the agent used a thermal imager to scan Kyllo's residence to "determine whether an amount of heat was emanating from [the residence] consistent with the use of [high-intensity] lamps."[63] The scan revealed that the roof over Kyllo's garage was relatively warm compared to the rest of his residence and the neighboring homes.[64] The agents presented this information, along with tips from informants and utility bills, to a federal magistrate judge who issued a warrant authorizing a search of Kyllo's home.[65] Inside, the agents found an indoor growing operation involving over 100 marijuana plants.[66]

At trial, Kyllo unsuccessfully moved to suppress the evidence seized from his home and was sentenced to sixty-three months in prison.[67] After the Ninth Circuit upheld the constitutionality of the agent's actions,[68] the U.S. Supreme Court granted certiorari for the October 2000 term.[69] The Court narrowly framed the issue as "whether the use of a thermal-imaging device aimed at a private home from a public street to detect relative amounts of heat within the home constitutes a 'search' within the meaning of the Fourth Amendment."[70] As a result, the Court limited the scope of their decision to surveillance of the home.[71] In a 5–4

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60. *Id.* at 29; *see also* Douglas A. Kash, *Prewarrant Thermal Imaging as a Fourth Amendment Violation: A Supreme Court Question in the Making*, 60 ALB. L. REV. 1295, 1297–99 (1997) (describing how thermal imaging devices work).

61. *Kyllo*, 533 U.S. at 29.

62. *Id.*; *see also* Kash, *supra* note 60, at 1296 (explaining that the high-intensity lamps required for indoor marijuana growing operations can generate temperatures up to 150 degrees Fahrenheit, which must be exhausted from the operation in order to remain at the optimal temperature of sixty to seventy degrees Fahrenheit).

63. *Kyllo*, 533 U.S. at 29–30.

64. *Id.* at 30.

65. *Id.*

66. *Id.*

67. United States v. Kyllo, 190 F.3d 1041, 1044 (9th Cir. 1999), *rev'd and remanded*, 533 U.S. 27 (2001).

68. *See id.* at 1046–47 (holding that use of the thermal imager did not constitute a search under the Fourth Amendment because the thermal scan did not intrude into activities within Kyllo's home, and Kyllo did not have an objectively reasonable expectation of privacy in the information that the thermal imager provided).

69. *Kyllo*, 533 U.S. at 27.

70. *Id.* at 29.

71. *See id.* at 29, 40. The Court emphasized the sanctity of the home under the Fourth Amendment. *Id.* at 31 ("'At the very core' of the Fourth Amendment 'stands

decision, the Court held that "[w]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."[72]

Frighteningly, backscatter technology reveals even more detail than infrared imaging.[73] Thus, *Kyllo* strongly suggests that government use of backscatter technology on a home would similarly be considered a 'search' under the Fourth Amendment.[74]

D. The Fourth Amendment and Automobiles

The Court acknowledged in *Kyllo* that it would be difficult to apply *Katz* to areas other than the home.[75] While individuals have an expectation of privacy in their automobiles,[76] the Court has described this expectation as limited or "diminished."[77] Because of this reduced expectation of privacy, "warrantless examinations of automobiles have been upheld in circumstances in which a search of a home or office would not."[78] This so-called "automobile exception,"[79] allows law enforcement to immediately

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the right of a man to . . . be free from unreasonable governmental intrusion.'" (quoting Silverman v. United States, 365 U.S. 505, 511 (1961))).

72. *Id.* at 29, 40.

73. *Compare ZBV*, AM. SCI. & ENG'G, http://as-e.com/products-solutions/cargo-vehicle-inspection/mobile/product/zbv# (last visited Nov. 17, 2013) (touting the ZBV's "photo-like imaging"), *with Kyllo*, 533 U.S. at 29–30 (discussing the capability of infrared imaging, which only "converts radiation into images based on relative warmth").

74. *See Kyllo*, 533 U.S. at 40 ("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.").

75. *Id.* at 34 ("While it may be difficult to refine *Katz* when the search of [other areas] is at issue, in the case of the search of the interior of homes . . . there is a ready criterion, with roots deep in the common law . . . .").

76. *See* New York v. Class, 475 U.S. 106, 114–15 (1986) ("While the interior of an automobile is not subject to the same expectations of privacy that exist with respect to one's home, a car's interior as a whole is nonetheless subject to Fourth Amendment protection from unreasonable intrusions by the police.").

77. *See id.* at 112–13 ("The Court has recognized that the physical characteristics of an automobile and its use result in a lessened expectation of privacy . . . ."); South Dakota v. Opperman, 428 U.S. 364, 367–68 (1976) ("Besides the element of mobility, less rigorous warrant requirements govern [automobiles] because the expectation of privacy with respect to one's automobile is significantly less than that relating to one's home or office.").

78. *Opperman*, 428 U.S. at 367 (citing Cardwell v. Lewis, 417 U.S. 583, 589 (1974); Cady v. Dombrowski, 413 U.S. 433, 439–40 (1973); Chambers v. Maroney, 399 U.S. 42, 48 (1970)). The Court has reasoned that "the inherent mobility of automobiles creates circumstances of such exigency that, as a practical necessity, rigorous enforcement of the warrant requirement is impossible." *Id.*

79. *See* California v. Carney, 471 U.S. 386, 390 (1985) (discussing the automobile exception).

and completely search an automobile without a warrant if they have probable cause to believe the vehicle contains "that which by law is subject to seizure."[80] Law enforcement officers are allowed to "stop and briefly detain a person for investigative purposes if the officer has a reasonable suspicion supported by articulable facts that criminal activity 'may be afoot,' even if the officer lacks probable cause."[81] However, law enforcement may not conduct a search of the automobile unless the search is supported by probable cause—facts that would justify the issuance of a warrant, even though a warrant has not actually been obtained.[82]

Government agents may also obtain information from within a constitutionally protected area without a warrant or probable cause if the method used to obtain the information does not constitute a "search" under the Fourth Amendment.[83] Sometimes, even use of sense-enhancing technology by the government to obtain information from within a constitutionally protected area does not constitute a "search."[84] For example, in *Texas v. Brown*, the Court held that a Fourth Amendment "search" had not occurred when the officer used a flashlight to view vials of illegal drugs in an automobile during a traffic stop.[85] The Court reasoned that there is "no legitimate expectation of privacy . . . shielding that portion of the interior of an automobile which may be viewed from outside the vehicle by either inquisitive passersby or diligent police officers."[86]

Another sense-enhancing method commonly used by law enforcement officials is the use of drug-sniffing canines.[87] In *City*

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80. Carroll v. United States, 267 U.S. 132, 149, 153–54 (1925). The Court has elaborated on their holding in *Carroll* to establish that items which are subject to seizure include mere evidence of a crime, instrumentalities of a crime, fruits of a crime, and contraband. *See* Warden v. Hayden, 387 U.S. 294, 300–01 (1967).

81. United States v. Sokolow, 490 U.S. 1, 7 (1989) (quoting Terry v. Ohio, 392 U.S. 1, 30 (1968)).

82. *See* United States v. Ross, 456 U.S. 798, 809 (1982) (discussing the exception to the warrant requirement established by the *Carroll* Court).

83. U.S. CONST. amend. IV; *see* Texas v. Brown, 460 U.S. 730, 733–34, 740 (1983) (holding that merely peering into the interior of a vehicle, a constitutionally protected area, is not a "search" under the Fourth Amendment).

84. *See* Weaver, *supra* note 3, at 1186 ("As a general rule, the Court has been reluctant (*with some exceptions*) to hold that police use of technology constitutes a search when the police do not intrude into a constitutionally protected area." (emphasis added)).

85. *Brown*, 460 U.S. at 733–34, 740.

86. *Id.* at 740 (citations omitted).

87. *See, e.g.*, Illinois v. Caballes, 543 U.S. 405, 406–07 (2005) (discussing the warrantless use of the canine sniff technique on a lawfully stopped automobile); City of Indianapolis v. Edmond, 531 U.S. 32, 34–35 (2000) (discussing the use of narcotics detection dogs at drug interdiction checkpoints without individualized suspicion).

of Indianapolis v. Edmond, the Court reiterated that "an exterior sniff of an automobile does not require entry into the car and is not designed to disclose any information other than the presence or absence of narcotics."[88] Likewise, in *Illinois v. Caballes*, the Court noted that "any interest in possessing contraband cannot be deemed 'legitimate,' and thus, governmental conduct that *only* reveals the possession of contraband 'compromises no legitimate privacy interest.'"[89] The Court, relying on its decision in *United States v. Place*,[90] reasoned that because a dog sniff reveals only the presence or absence of contraband, its use during a lawful traffic stop does not constitute a Fourth Amendment search.[91]

While use of flashlights, dog sniffs, and other sense-enhancing devices may not amount to a Fourth Amendment search of an automobile in most circumstances,[92] use of backscatter X-ray technology would most certainly constitute a Fourth Amendment search. Whereas a flashlight is a commonly-owned item that allows officers to peer into automobiles to view objects that would otherwise be in plain view in well-lit conditions, backscatter technology is not in general public use and creates an extrasensory view inside automobiles.[93] Likewise, unlike a dog sniff, backscatter X-ray technology has the potential to detect lawful activity within a constitutionally protected area.[94] Therefore, police use of backscatter X-ray imaging on

88. *Edmond*, 531 U.S. at 40.

89. *Caballes*, 543 U.S. at 408 (quoting United States v. Jacobsen, 466 U.S. 109, 123 (1984)).

90. *Id.* at 409 (citing United States v. Place, 462 U.S. 696, 707 (1983)) (finding that "the canine sniff is *sui generis*," in part because it "discloses only the presence or absence of narcotics")).

91. *Id.* The Court distinguished its holding from *Kyllo* by highlighting the potential of the thermal imagining device at issue in *Kyllo* to "detect[] lawful activity." *Id.* at 409–10. *But see* Leslie A. Lunney, *Has the Fourth Amendment Gone to the Dogs?: Unreasonable Expansion of Canine Sniff Doctrine to Include Sniffs of the Home*, 88 OR. L. REV. 829, 861–62 (2009) ("[E]rror rates for drug-detection dogs undermine the Court's accuracy justification for treating the canine sniff as a *sui generis* practice.").

92. *Caballes*, 543 U.S. at 409; Texas v. Brown, 460 U.S. 730, 733–34, 740 (1983).

93. *See infra* Part III.A (discussing the capabilities of backscatter X-ray technology). The Court in *Kyllo*, although limiting its holding to searches of the home, held that the Government's use of devices "not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion, . . . is a 'search' and is presumptively unreasonable without a warrant." Kyllo v. United States, 533 U.S. 27, 40 (2001). Although the Court has not discussed police use of ZBVs, it seems likely it would find that police use of ZBVs on automobiles, similar to the infrared technology used in *Kyllo*, is presumptively unreasonable, in part because they are not in general public use. *See id.*

94. *See Caballes*, 543 U.S. at 409–10 (explaining that areas housing intimate legal activity are constitutionally protected); Booth, *supra* note 11 (discussing the intimate areas on which backscatter technology may intrude); *infra* Part IV (discussing the intrusive power of backscatter technology in the context of vehicles).

automobiles certainly constitutes a search under the Fourth Amendment.[95] Consequently, police use of backscatter X-ray imaging on automobiles without a warrant or probable cause violates the Fourth Amendment's protection against unreasonable searches.[96]

III. BACKSCATTER TECHNOLOGY

A. How Backscatter Technology Works

Backscatter technology uses low-level X-rays to see through objects and create an image of the object being scanned.[97] As the name implies, it generates an image from the X-rays that are scattered off an object and collected by sensors facing the object.[98] During the scan, X-rays interact with the object being scanned and will either pass through the object, get absorbed by the object, or scatter from the object.[99] Higher-density matter absorbs more of the X-rays, whereas matter composed of low-density organic material causes the X-rays to scatter.[100] The resulting image is bright white where X-rays scatter the strongest, indicating organic matter, and darker where inorganic matter has absorbed the X-rays.[101] The "photo-like" images created by backscatter X-rays are so detailed and accurate that some have likened the use of the technology to a virtual strip-search.[102]

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95. *See, e.g.*, *Caballes*, 543 U.S. at 409–10 (explaining how technology exposing intimate details constitutes an unlawful search); Booth, *supra* note 11 (noting that airport backscatter technology takes "naked images" of passengers).

96. *See* U.S. CONST. amend. IV; *see also supra* text accompanying notes 92–95.

97. Martin, *supra* note 11; *see also Z Backscatter*, AM. SCI. & ENG'G, http://as-e.com/resource-center/technology/z-backscatter/ (last visited Nov. 17, 2013).

98. Sam Kamin, *Law and Technology: The Case for a Smart Gun Detector*, 59 LAW & CONTEMP. PROBS. 221, 243 (1996); *Backscatter X-Ray*, TECH-FAQ, http://www.tech-faq.com/backscatter-x-ray.html (last updated Dec. 9, 2012).

99. *Z Backscatter*, *supra* note 97.

100. *Id.* Low-density organic objects include cigarettes, drugs, explosives, and human bodies. *Id.*

101. *Id.* "Even inorganic objects, such as metals, are given shape and form in [backscatter] images." *Id.* American Science & Engineering, the creator of the ZBV, touts the photo-like images as "easy-to-interpret, revealing both the presence and exact position of organic components of the scanned object." *Id.*

102. Declan McCullagh, *Feds Admit Storing Checkpoint Body Scan Images*, CNET (Aug. 4, 2010), http://news.cnet.com/8301-31921_3-20012583-281.html ("Body scanners penetrate clothing to provide a highly detailed image so accurate that critics have likened it to a virtual strip search."); *Whole Body Imaging Technology and Body Scanners*, ELEC. PRIVACY INFO. CTR., http://epic.org/privacy/airtravel/backscatter/ (last visited Nov. 17, 2013) ("Security experts have described whole body scanners as the equivalent of 'a physically invasive strip-search.'"); *Z Backscatter*, *supra* note 97.

B. Backscatter Technology and National Security

Before backscatter X-rays became mobilized in unmarked ZBVs,[103] the technology was introduced at the airport and on the border to bolster national security.[104] Currently, it is utilized on the border via backscatter portals, and at the airport in some AIT scanners.[105]

1. On the Border. The Department of Homeland Security's Customs and Border Protection (CBP) is the agency responsible for "securing the border and facilitating lawful international trade and travel while enforcing hundreds of U.S. laws and regulations."[106] In 2008, CBP began utilizing backscatter technology at border crossings to help achieve their mission.[107] Through the use of the Z Portal Imaging System, CBP agents are able to detect "low density objects that may be hidden in vehicle fenders, tires, trunks, gas tanks, or under the hood."[108]

The CBP describes the Z Portal as a "safe, efficient, drive-through passenger vehicle imaging system with enhanced capability for rapid scanning of conveyances for the presence of contraband."[109] As vehicles pass through, the Z Portal provides photo-like images simultaneously from three different views: top, left, and right.[110] At a throughput of 120 passenger

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103. *See* Greenberg, *supra* note 12 ("The same [backscatter X-ray vision] technology [at airports and courthouses], capable of seeing through clothes and walls, has also been rolling out on U.S. streets.").

104. *Advanced Imaging Technology*, TRANSP. SEC. ADMIN., http://www.tsa.gov/traveler-information/advanced-imaging-technology-ait (last updated July 23, 2013); *Z-Portal Vehicle Imaging System*, U.S. CUSTOMS & BORDER PROT. (Aug. 2008), http://www.cbp.gov/linkhandler/cgov/newsroom/fact_sheets/port_security/z_portal.ctt/z_portal.pdf.

105. Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Security, 653 F.3d 1, 3 (D.C. Cir. 2011); *Advanced Imaging Technology*, *supra* note 104 ("More than 740 AIT units are deployed at almost 160 airports nationwide."); Jeanne Meserve, *High-Tech Portal to Aid Border Screenings*, CNN (Oct. 16, 2008), http://www.cnn.com/2008/TECH/10/16/border.portal/; *Z-Portal Vehicle Imaging System*, *supra* note 104.

106. *About CBP*, U.S. CUSTOMS & BORDER PROT., http://www.cbp.gov/xp/cgov/about/ (last visited Nov. 17, 2013).

107. Press Release, U.S. Customs and Border Prot., CBP Launches Enhanced Scanning Capability at San Ysidro Entry (Oct. 16, 2008), *available at* http://www.cbp.gov/archived/xp/cgov/newsroom/news_releases/archives/2008_news_releases/oct_2008/10162008_3.xml.html.

108. *Id.*; *see also Z Portal for Passenger Vehicles*, AM. SCI. & ENG'G, http://as-e.com/products-solutions/cargo-vehicle-inspection/drive-through/product/z-portal-for-passenger-vehicles (last visited Nov. 17, 2013) (discussing the capabilities of the Z Portal for scanning automobiles and their cargo).

109. *Z-Portal Vehicle Imaging System*, *supra* note 104.

110. *Z Portal for Passenger Vehicles*, *supra* note 108.

vehicles per hour, the Z Portal "is as efficient as it is thorough."[111]

Based on Supreme Court case law discussing searches at the border, use of Z Portals at the border to inspect vehicles traveling into the United States is most likely not a violation of the Fourth Amendment.[112] The government's interest in protecting the border has been described as "paramount."[113] In fact, the First Congress gave the Executive the authority to conduct border searches to secure the nation's borders.[114]

In *United States v. Ramsey*, the Supreme Court held that a customs agent's warrantless search of an envelope entering the United States did not violate the Fourth Amendment.[115] In *Ramsey*, Charles W. Ramsey and James W. Kelly had engaged in a "heroin-by-mail enterprise."[116] The drug trafficking scheme involved procuring heroin contained in envelopes mailed from Bangkok, Thailand, and distributing the heroin to various locations in and around the Washington, D.C. area.[117] Pursuant to this practice, one of Ramsey's associates mailed multiple letter-sized envelopes addressed to four different locations in the D.C. area.[118] A U.S. customs officer in New York City noticed eight bulky envelopes during an inspection of incoming international mail from Thailand.[119] He suspected the envelopes

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111. *Id.*; *see also* William M. Bradshaw, Note, *Borderline: Why the Federal Government May Use Backscatter Technology to Search Vehicles and Containers at International Borders, but the Fourth Amendment May Block Its Use on Persons*, 44 CREIGHTON L. REV. 1357, 1390 (2011) (arguing that the use of backscatter technology to search automobiles entering the United States does not violate the Fourth Amendment).

112. *See, e.g.*, United States v. Flores-Montano, 541 U.S. 149, 152–53 (2004) (establishing an extremely lax standard for border searches).

113. *Id.* at 153.

114. *See* United States v. Ramsey, 431 U.S. 606, 616–17 (1977) (discussing the first customs statute, passed in 1789, which granted "plenary customs power," that applied to almost all border searches, implying that the later-suggested and far more limited protections of the Fourth Amendment did not apply to border searches).

115. *Id.* at 607–08, 611, 624–25; *see also* United States v. Montoya de Hernandez, 473 U.S. 531, 538 (1985) ("Routine searches of the persons and effects of entrants are not subject to any requirement of reasonable suspicion, probable cause, or warrant . . . .").

116. *Ramsey*, 431 U.S. at 608.

117. *Id.*

118. *Id.* at 609.

119. *Id.* Prior to these events, West German agents intercepted several transatlantic conversations between Ramsey and his associates regarding their narcotics operation. *Id.* at 608. Pursuant to this information, the West German agents alerted Thai officials once Ramsey's associates traveled to Thailand. *Id.* at 608–09. Two days prior to the search in question, two of Ramsey's associates were arrested in Thailand after Thai officials observed one of them mailing envelopes—which turned out to be heroin-filled—in a suspicious manner. *Id.* at 609. The customs officer who inspected the envelopes in New York City, however, did so without any knowledge of these events. *Id.*

"might contain merchandise or contraband rather than correspondence."[120] The customs officer took the envelopes to an examining area and weighed them.[121] After noticing one of the envelopes weighed "some three to six times the normal weight of an airmail letter," the inspector opened the envelope and found that it contained heroin.[122] Federal agents used this information to arrest Ramsey and Kelly.[123]

The Supreme Court held that the customs officer's warrantless search of the envelope did not violate the Fourth Amendment.[124] The Court reasoned that "border searches [are] not subject to the warrant provisions of the Fourth Amendment and [are] 'reasonable' within the meaning of that Amendment . . . ."[125] In this regard, the Court noted that the search of a package at the border is constitutionally distinguishable from many domestic searches, which presumptively require a warrant.[126]

In *United States v. Flores-Montano*, the Supreme Court held that "the Government's authority to conduct suspicionless inspections at the border includes the authority to remove, disassemble, and reassemble a vehicle's fuel tank."[127] In reaching their conclusion, the Court distinguished between searches of persons and searches of vehicles.[128] The Court noted that "[c]omplex balancing tests to determine what is a 'routine' search of a vehicle, as opposed to a more 'intrusive' search of a person, have no place in border searches of vehicles."[129] Accordingly, the

120. *Id.*

121. *Id.*

122. *Id.* at 609–10.

123. *Id.* at 610. The trial court denied the defendants' motion to suppress the heroin and sentenced the defendants to imprisonment for ten to thirty years. *Id.* at 610–11. The Court of Appeals for the District of Columbia Circuit reversed, holding that the Constitution requires that "before international letter mail is opened, a showing of probable cause be made to and a warrant secured from a neutral magistrate." United States v. Ramsey, 538 F.2d 415, 421 (D.C. Cir. 1976).

124. *Ramsey*, 431 U.S. at 624–25. Although the search occurred in New York and not at the literal border, the Court nevertheless reasoned that the initial search of the envelope constituted a search at the border because it occurred at the point of entry into the United States. *Id.* at 609 n.2.

125. *Id.* at 617.

126. *See id.* at 619, 622 ("Border searches, then, from before the adoption of the Fourth Amendment, have been considered to be 'reasonable' by the single fact that the person or item in question had entered into our country from outside.").

127. United States v. Flores-Montano, 541 U.S. 149, 155 (2004).

128. *Id.* at 152 ("[T]he reasons that might support a requirement of some level of suspicion in the case of highly intrusive searches of the person—dignity and privacy interests of the person being searched—simply do not carry over to vehicles.").

129. *Id.* Once again, the Court also affirmed the Government's paramount interest in protecting the nation's borders. *Id.* ("The Government's interest in

Court held that "[w]hile it may be true that some searches of property are so destructive as to require a different result," the removal, disassembly, and reassembly of a vehicle's fuel tank is not one of them.[130]

Courts are likely to find that CBP's use of backscatter technology via Z Portals to conduct suspicionless searches of vehicles entering the United States does not violate the Fourth Amendment.[131] Supreme Court precedent reiterates the government's "paramount interest in protecting the border," and its corresponding right to conduct suspicionless searches of vehicles as long as the search is not so destructive as to cause irreversible damage.[132] Searches conducted at the border using Z Portals do not cause such harm.[133] Because courts have approved of other searches at the border that are arguably more harmful to vehicles, it is likely that suspicionless use of backscatter technology would not violate the Fourth Amendment, notwithstanding its invasive nature.[134]

2. At the Airport. The use of backscatter technology at airports has been anything but surreptitious.[135] In 2007, the TSA began using AIT in the form of body scanners at airport security checkpoints across the United States.[136] Each AIT scanner utilizes either backscatter technology or millimeter wave technology to achieve the TSA's goal of searching passengers for weapons and contraband.[137]

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preventing the entry of unwanted persons and effects is at its zenith at the international border.").

130. *Id.* at 155–56; *see also* United States v. Chaudhry, 424 F.3d 1051, 1054 (9th Cir. 2005) ("[T]he drilling of a single small-diameter hole into a pickup truck bed that does not affect the operation or safety of the vehicle . . . does not require reasonable suspicion."); United States v. Cortez-Rocha, 394 F.3d 1115, 1117–18, 1125 (9th Cir. 2005) (allowing the government to slash an automobile's spare tire at the border without reasonable suspicion).

131. *Flores-Montano*, 541 U.S. at 153–55; *see* Bradshaw, *supra* note 111, at 1380–84 (arguing that the use of backscatter technology to search automobiles entering the United States does not violate the Fourth Amendment).

132. *Flores-Montano*, 541 U.S. at 155–56 (discussing the non-destructive nature of a gas tank search and noting that it did not constitute a search so destructive as to require a different result).

133. *See Z Portal for Passenger Vehicles*, *supra* note 108 (stating that the Z Portal's "low radiation dose is safe for operators, drivers, and the environment").

134. *See supra* note 130 and accompanying text (discussing other cases in which courts have upheld suspicionless searches of automobiles).

135. *See, e.g.*, Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Sec., 653 F.3d 1, 3–4 (D.C. Cir. 2011); Press Release, Am. Sci. & Eng'g, AS&E Wins 2012 GSN Homeland Security Award (Dec. 3, 2012) [hereinafter AS&E Award], *available at* http://ir.as-e.com/releasedetail.cfm?ReleaseID=724507 (noting the prevalence of ZBV units in use by the U.S. government).

136. *Elec. Privacy Info. Ctr.*, 653 F.3d at 3.

137. *Id.* Millimeter wave technology employs radio frequency energy instead of X-ray beams. *Id.*

As a result of the terrorist attacks on September 11, 2001, airport travelers no longer have a reasonable expectation of absolute privacy at the airport.[138] Nevertheless, public outcry against the AIT scanners echoed across the country.[139] Eventually, private parties began to file lawsuits in federal district courts against the TSA to prevent use of AIT scanners.[140] These claims, however, were unsuccessful.[141]

Federal courts have noted that per federal statute, U.S. courts of appeals have exclusive jurisdiction to review and "affirm, amend, modify, or set aside any part of [a TSA] order."[142] Accordingly, the Electronic Privacy Information Center (EPIC), along with two of its advisory board members who had been frequently subjected to AIT screening by the TSA, petitioned the D.C. Circuit for review.[143] The court held that the TSA's adoption of AIT scanners for primary screening constituted a substantive legislative rule subjecting it to the requirements of notice-and-comment rulemaking.[144] Because the TSA failed to follow the Administrative Procedure Act's requirements for notice-and-comment rulemaking, the court granted EPIC's petition and remanded the matter back to the TSA.[145]

The court, however, denied EPIC's claim that the TSA's use of AIT scanners violates the Fourth Amendment.[146] The court relied on the Supreme Court's "repeated[] refus[al] to declare that only the least intrusive search practicable can be reasonable

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138. *See* Roger Clark, *The Inalienable Right to Fly*, L.A. LAW., Sept. 2006, at 60, 60 ("[O]ur 'societal expectations' have changed . . . . We now accept what is essentially a micro-police state in an airport, giving up our right of free speech and giving up our right to be free of search except upon probable cause."); *see also* City of Indianapolis v. Edmond, 531 U.S. 32, 33 (2000) (stating that the need to search airline passengers "to ensure public safety can be particularly acute"); United States v. Aukai, 440 F.3d 1168, 1178, 1181 (9th Cir. 2006) (implying that post-9/11 hijacking fears have changed society's expectations surrounding airport searches).

139. *See supra* note 10 and accompanying text (discussing the general public's negative reaction to airport use of AIT scanners).

140. *See, e.g.*, Roberts v. Napolitano, 798 F. Supp. 2d 7, 9 (D.D.C. 2011); Durso v. Napolitano, 795 F. Supp. 2d 63, 65–66, 72 (D.D.C. 2011).

141. *See Roberts*, 798 F. Supp. 2d at 12; *Durso*, 795 F. Supp. 2d at 73.

142. 49 U.S.C § 46110(a)–(c) (2006); *see, e.g.*, *Roberts*, 798 F. Supp. 2d at 10; *Durso*, 795 F. Supp. 2d at 66.

143. Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Sec., 653 F.3d 1, 4 (D.C. Cir. 2011).

144. *Id.* at 6.

145. *Id.* at 11. Notice-and-comment rulemaking would require the TSA to publish the proposed rule, take comments on it from interested parties, and respond to those comments before implementing the final rule. *See* 5 U.S.C. § 553(b)–(c) (2012) (describing the procedures for notice-and-comment rulemaking).

146. *Elec. Privacy Info. Ctr.*, 653 F.3d at 10–11.

under the Fourth Amendment."[147] Before reaching its decision, the court assured that "[n]o passenger is ever required to submit to an AIT scan."[148] Instead, "[s]igns at the security checkpoint notify passengers they may opt instead for a patdown, which the TSA claims is the only effective alternative method of screening passengers."[149]

The amount of controversy created by the TSA's use of backscatter technology to screen passengers at airports is understandable, even when taking into consideration the decreased expectation of privacy at airports and the elective nature of AIT screening. One might assume that the presence of mobilized backscatter technology on the streets would create a similar, if not more aggressive, response from the public.[150] This has yet to be the case, however.[151]

IV. BACKSCATTER TECHNOLOGY ON THE STREETS

The Z Backscatter Van (ZBV) is a product manufactured by American Science & Engineering (AS&E)—the same company that manufactures Z Portals.[152] The ZBV is described by AS&E as "the most maneuverable, versatile, and successful cargo and vehicle screening system on the market."[153] Essentially, the same backscatter technology capable of seeing through clothes at airports and vehicles at international border checkpoints has been mobilized and deployed in street-roving vans.[154] AS&E's promotional video for the ZBV details its Orwellian capabilities.[155]

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147. *Id.* (alterations in original) (quoting City of Ontario v. Quon, 130 S. Ct. 2619, 2632 (2010)) (internal quotation marks omitted).

148. *Id.* at 3.

149. *Id.*

150. *See* Andy Greenberg, *Scanner Vans Allow Drive-By Snooping*, FORBES (Sept. 9, 2010), http://www.forbes.com/forbes/2010/0927/technology-x-rays-homeland-security-aclu-drive-by-snooping.html (describing ZBVs as "mobile versions of the same full-body scanning technique that has tested Americans' tolerance for intrusion as it's been deployed in airports around the country").

151. *See id.* (recognizing that most "[p]rivacy-conscious travelers . . . . likely aren't aware that the [AIT] technology, capable of seeing through walls and clothes, has also been rolling out on U.S. streets").

152. *See Z Portal for Passenger Vehicles*, *supra* note 108 (discussing the Z Portal, another product manufactured by AS&E); *ZBV*, *supra* note 73.

153. *ZBV*, *supra* note 73.

154. Greenberg, *supra* note 12.

155. *See* American Science & Engineering, *"ZBV"—Z Backscatter Van*, YOUTUBE (Sept. 12, 2010), http://www.youtube.com/watch?v=iABPKd0vFxQ [hereinafter *Z Backscatter Van*] (showcasing the capabilities of the ZBV).

Similar to AS&E's Z Portal,[156] the ZBV provides "photo-like imaging."[157] Additionally, the ZBV has the added ability to scan while driving past "cars, trucks, containers, and other objects."[158]

A. The Growing Presence of ZBVs

Although the ZBV has not received as much attention from the media as its AIT scanner relatives at airports, it has gained recognition in the technology community the same way it operates: quietly and surreptitiously.[159]

AS&E's ZBV "is the number one selling cargo and vehicle inspection system on the market."[160] Since its introduction in 2003, more than 600 systems have been sold to over 120 different customers in 55 countries.[161] The presence and usefulness of the ZBV has not gone unnoticed by the technology community.[162] In 2012, AS&E's ZBV product line was selected as the "Best Explosives Detection Solution" by Government Security News magazine at the 2012 Homeland Security Awards in Washington, D.C.[163]

B. The Covert Nature and Utilization of ZBVs

Regardless of the ZBV's rising notoriety within the technology community and increasing demand from the Department of Defense,[164] the general public appears largely unaware of the possibility that local law enforcement may be

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156. *Z Portal for Passenger Vehicles*, *supra* note 108.

157. *ZBV*, *supra* note 73.

158. *Compare Z Backscatter Van*, *supra* note 155 (stating that as the ZBV scans, whether stationary or in motion, the images created by the ZBV can be immediately analyzed by the operator seated in the ZBV), *with Z Portal for Passenger Vehicles*, *supra* note 108 (describing the Z Portal's design as a "high-throughput . . . gateway" scanner). A ZBV scan has a range of five feet. *ZBV*, *supra* note 73.

159. *See* Grabell, *supra* note 6 (discussing an interview with Joe Reiss, AS&E's vice president of marketing, who claims the vans are "designed for covert use"); *see also Z Backscatter Van*, *supra* note 155 ("From the outside, the ZBV looks like an ordinary delivery van, allowing it to blend in to urban and other landscapes.").

160. AS&E Award, *supra* note 135.

161. *Id.* The ZBV system is used by "leading government agencies, border authorities, military bases, law enforcement departments and security agencies worldwide." *Id.* AS&E reports that the company has sold the vans to customers on "all continents except Antarctica." Greenberg, *supra* note 150.

162. AS&E Award, *supra* note 135 (recognizing that the AS&E received the GSN Homeland Security Award).

163. *Id.*

164. *See id*; *see also* Greenberg, *supra* note 12 (reporting that the most frequent purchaser of ZBVs over the last seven years has been the Department of Defense for their operations in Afghanistan and Iraq).

using ZBVs on the streets of their own neighborhoods.[165] While the same technology has created a great amount of controversy within airports, the arguably more invasive,[166] mobile version of the technology has received only a fraction of attention in comparison.[167]

Frequency of use is one obvious explanation. The TSA reports that "[m]ore than 740 AIT units are deployed at almost 160 airports nationwide."[168] The TSA reports that over 99% of passengers choose to utilize the AIT scanners over alternative screening procedures.[169] Therefore, of the two million passengers screened by the TSA every day,[170] millions are exposed to and are thus aware of the AIT scanners in use.[171]

AS&E reveals that it has sold more than 600 ZBVs to over 55 countries;[172] however, it is unclear how often ZBVs are utilized on American streets.[173] Indeed, one of the purposes of this Comment is to discuss the known extent of law enforcement's use of ZBVs and propose solutions to create more transparency within our government.[174] Presumably, airport AIT scanners are used far more frequently than ZBVs in light of the millions of daily airline travelers.[175]

The greatest hindrance to the public's awareness of ZBV utilization is the covert nature of the ZBVs themselves.[176] AS&E

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165. *See* Grabell, *supra* note 6 (discussing how the "unmarked X-ray vans" are "designed for covert use").

166. *See* Greenberg, *supra* note 12 (describing the ZBV as "one of the most intrusive technologies conceivable" (quoting Marc Rosenberg, Executive Director of EPIC)); *supra* Part III.B.2 (discussing the controversial use of backscatter technology at airports where the expectation of privacy is decreased).

167. *See* Grabell, *supra* note 6 (noting covert nature of ZBV vans); Diane Macedo, *X-ray Vans: Security Measure, or Invasion of Privacy?*, FOX NEWS (Oct. 22, 2010), http://www.foxnews.com/scitech/2010/10/19/x-ray-vans-security-measure-invasion-privacy/ (reporting the same); Lesley Ciarula Taylor, *Technology Behind Full-Body Scanners Being Used in Unmarked Vans*, STAR (Aug. 31, 2010), http://www.thestar.com/news/world/article/854893--technology-behind-full-body-scanners-being-used-in-unmarked-vans (reporting the same).

168. *Advanced Imaging Technology*, *supra* note 104.

169. *Id.*

170. Scott Shane, *Administration to Seek Balance in Air Screening*, N.Y TIMES, Nov. 22, 2010, at A1.

171. *See Advanced Imaging Technology*, *supra* note 104 (reporting that the vast majority of airplane passengers choose AIT screening over any other screening procedure).

172. AS&E Award, *supra* note 135.

173. *See infra* Part IV.C (discussing various reports confirming utilization of ZBVs).

174. *See infra* Part V (discussing possible solutions).

175. *See supra* notes 169–70 and accompanying text (reporting that ninety-nine percent of the two million passengers screened every day by the TSA choose to utilize the AIT scanners over alternative screening procedures).

176. *See* Taylor, *supra* note 167 (describing the ZBV as "an innocuous, unmarked white van"); *see also* Macedo, *supra* note 167 (describing the ZBV as a "standard delivery van").

describes the ZBV in its promotional video: "From the outside, the ZBV looks like an ordinary delivery van, allowing it to blend in to urban and other landscapes. Yet, as it passes by cars, trucks, containers and other objects, its unparalleled X-ray screening system provides photo-like images, detecting explosives, weapons, contraband, and stowaways."[177]

Others have described ZBVs as "unmarked white van[s]"[178] that resemble "standard delivery van[s]."[179] Even Joe Reiss, AS&E's vice president of marketing, concedes that ZBVs are "designed for covert use."[180] Because ZBVs are inherently covert and naturally "blend in" to urban landscapes,[181] the extent of their use is difficult to quantify.

C. Reports of ZBVs Used Domestically

Despite their covert nature, ZBVs have not gone completely unnoticed. Reports and incidents of their use have appeared occasionally in news reports, books, and court opinions.

For example, in 2010 the U.S. Department of Homeland Security, the TSA, federal air marshals, and other state and local agencies conducted exercises with ZBVs along Interstate 20 in Georgia.[182] Although the federal agents were not responding to a specific threat, the operation "snarled truck traffic on I-20,"[183] as ZBVs scanned cargo from more than 600 semi-truck trailers traveling along the interstate.[184]

ZBVs have also been used on the streets of New York City. In their book, *Bomb Squad: A Year Inside the Nation's Most Exclusive Police Unit*, ABC News reporters Richard Esposito and Ted Gerstein discuss the New York Police Department's use of

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177. *Z Backscatter Van*, *supra* note 155.

178. Taylor, *supra* note 167.

179. Macedo, *supra* note 167.

180. Grabell, *supra* note 6.

181. *Z Backscatter Van*, *supra* note 155.

182. Rusty Ray, *Exclusive*: *Feds Roll Out Mobile Backscatter X-Ray Units on Georgia's I-20 in VIPR Counter-Terrorism Operation*, BIG 3 NEWS (Oct. 3, 2010), http://www.big3news.net/2010/10/03/exclusive-feds-roll-out-backscatter-x-ray-units-on-georgias-i-20-in-expanded-vipr-counter-terrorism-operation/; *see also* Grabell, *supra* note 6 (mentioning the exercise was conducted along Interstate 20); Charles Tate, *Mobile X-Ray Anti-Terrorist Van Disturbs Privacy Advocates*, INTERNETBITS (Oct. 4 2010), http://web.archive.org/web/20110101030607/http://www.internetbits.com/mobile-x-ray-anti-terrorist-van-disturbs-privacy-advocates/54175/ (recounting that the operation utilized ZBV technology).

183. Patrik Jonsson, *'Feds Radiating Americans'? Mobile X-Ray Vans Hit US Streets*, CHRISTIAN SCI. MONITOR (Sept. 29, 2010), http://www.csmonitor.com/USA/2010/0929/Feds-radiating-Americans-Mobile-X-ray-vans-hit-US-streets.

184. Ray, *supra* note 182.

ZBVs at the 2004 Republic convention.[185] The authors recall how "hours before [President Bush's] convoy neared its final approach to the hotel where the President would stay, each car or bus or truck that entered that street was forced to . . . . pass[] between the two parked white vans."[186] The authors identified the two white vans as ZBVs and described them as "the pride of the squad."[187]

D. ZBVs in Court Decisions

Evidence of law enforcement using ZBVs during traffic stops has also appeared in court opinions. For example, in *United States v. Reyes-Bernal*, a U.S. Border Patrol agent on Interstate 15 in California witnessed the defendant changing lanes quickly and behaving suspiciously.[188] The agent became more suspicious of the defendant after learning there was an "alert" in the defendant's border crossing file.[189] The agent pulled the defendant's vehicle over.[190] Once stopped, "the defendant voluntarily gave Agent Gonzales consent to conduct . . . a ZBV x-ray scan of the vehicle."[191] The court subsequently denied the defendant's motion to suppress evidence obtained by the ZBV scan, holding that the agent had reasonable suspicion to stop the defendant's vehicle.[192] Additionally, the court found that the defendant voluntarily consented to the ZBV scan.[193] As a result, the court did not discuss whether use of the ZBV constituted a search under the Fourth Amendment.[194]

Similarly, in *United States v. Luna*, the defendant filed a motion to suppress evidence obtained from his truck using a ZBV.[195] While on patrol, Kansas Highway Patrol Trooper

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185. RICHARD ESPOSITO & TED GERSTEIN, BOMB SQUAD: A YEAR INSIDE THE NATION'S MOST EXCLUSIVE POLICE UNIT 151–53 (2007); Grabell, *supra* note 6.

186. ESPOSITO & GERSTEIN, *supra* note 185, at 152.

187. *Id.* The authors note that in Iraq, the rebel forces referred to the ZBVs as "white devils" because of the success they had in hunting for "explosive caches and weapons dumps." *Id.* In another report, Forbes's Andy Greenberg reports that "[t]he New York Police Department confirmed that it uses the technology but wouldn't divulge specifics." Greenberg, *supra* note 150; *see also* Macedo, *supra* note 167 (reporting the same).

188. United States v. Reyes-Bernal, No. 10-1365-R, 2011 WL 761551, at *1 (C.D. Cal. Feb. 24, 2011).

189. *Id.*

190. *Id.*

191. *Id.*

192. *Id.* at *1–2.

193. *Id.* at *1.

194. *Id.* at *1–2.

195. United States v. Luna, No. 10 CR 176–1, 2011 WL 663062, at *1, *3–4 (N.D. Ill. Feb. 14, 2011).

Nicholas observed Luna driving a commercial semi-truck travelling eastbound on Interstate 70 near Topeka, Kansas.[196] Trooper Nicholas ran a check of the Department of Transportation (DOT) number located on the side of the semi-truck.[197] After the DOT number failed to produce a match in the department database,[198] "Trooper Nicholas activated his emergency lights and directed [Luna to pull his] semi-truck to the side of the road."[199]

Trooper Nicholas noticed a few irregularities in Luna's story of how the cargo was loaded in the back of the truck.[200] Trooper Nicholas asked if he could examine the load, and Luna consented.[201] After he noticed further irregularities while he inspected the way the cargo was loaded, Trooper Nicholas asked if he could search the rest of the semi-truck.[202] Luna consented once again.[203]

Several minutes after Trooper Nicholas discussed the suspicious situation with one of his colleagues over the phone, a Kansas Highway Patrol ZBV arrived on the scene.[204] After scanning the semi-truck, the scan revealed a concealed compartment where officers discovered "thirty-two individually wrapped one-kilogram packages"—later identified as cocaine.[205]

The district court denied Luna's argument that he "never gave [the KHP officers] permission to go inside the walls of [his] truck."[206] The court reasoned that the Fourth Amendment's warrant requirement "does not apply in circumstances where an authorized party voluntarily consents to a search."[207] Furthermore, Luna did not limit the scope of his consent and "stood by quietly, and made no objection" when the officers used the ZBV.[208] Therefore, because Luna consented to the search of his semi-truck, the court held that the search did not violate the

196. *Id.* at *1.
197. *Id.*
198. *Id.*
199. *Id.*
200. *Id.* at *2.
201. *Id.*
202. *Id.*
203. *Id.* "It is undisputed that Luna never withdrew his consent to search the truck. Nor did he object to the KHP officers' scan of his truck." *Id.* at *8.
204. *Id.* at *2–3.
205. *Id.* at *3.
206. *Id.* at *8 (alterations in original) (citation omitted).
207. *Id.* at *9.
208. *Id.* at *10.

Fourth Amendment.[209] Consequently, the court did not reach the issue of whether use of the ZBV fell within the definition of a Fourth Amendment search.[210]

It is unclear whether Luna knew he had consented to an X-ray search of his vehicle.[211] The court does not specify whether the officers informed Luna of the ZBV's ability to see through his truck.[212] Instead, Trooper Nicholas merely "asked Luna for consent to search the semi-truck."[213] "The standard for measuring the scope of a suspect's consent under the Fourth Amendment is that of 'objective' reasonableness—what would the typical reasonable person have understood by the exchange between the officer and the suspect?"[214]

It is possible Luna did not know the scope of his consent. After all, the court does not give any details about the officers informing Luna that by consenting to a search, he was consenting to an X-ray scan of his semi-truck.[215] In fact, the court notes that the video recording of the incident cuts off moments before the backscatter scan took place.[216] It is plausible that the officers asked for Luna's consent to search the semi-truck without disclosing the fact that they intended to use backscatter technology to do so.[217] Even when the ZBV arrived to perform the scan, because of the ZBV's inherently covert nature and innocuous appearance, Luna may have been completely unaware that an X-ray scan of his vehicle was in progress as the unidentified van drove past his semi-truck.[218]

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209. *Id.* ("The Court finds Luna's consent to have been knowing and voluntary. As such, the KHP officers' warrantless search of Luna's truck withstands constitutional scrutiny.").

210. *Id.* at *9–10.

211. *See id.* at *8–9 ("Luna also contends that he 'never gave [the KHP officers] permission to go inside the walls of [his] truck.'" (alterations in original)).

212. *See id.* at *2–3, *8.

213. *Id.* at *8. The court adds that another officer "credibly testified that he never saw Luna object to the KHP officers' use of the backscatter truck." *Id.* at *10. Additionally, the court notes that "Luna watched the troopers search his semi-truck, stood by quietly, and made no objection." *Id.*

214. Florida v. Jimeno, 500 U.S. 248, 251 (1991).

215. *Luna*, 2011 WL 663062, at *10.

216. *Id.* at *3 & n.8.

217. *See id.* at *2–3 (detailing how Luna consented to a search of his semi-truck, which eventually resulted in relocating the automobile to a rest stop so that the officer could "complete the search of the semi-truck"). This ultimately led to the officers utilizing a ZBV without ever mentioning the officers informing Luna of the backscatter scan. *Id.* at *3.

218. *See supra* Part IV.B (discussing the ZBV's appearance and covert nature). This may explain why Luna "stood by quietly, and made no objection" as the ZBV drove past his semi-truck. *See Luna*, 2011 WL 663062, at *10.

Thus, although the case is not an explicit example of abuse, *Luna* presents one example of how law enforcement could potentially abuse the use of ZBVs through surreptitious use or by exceeding the scope of the suspect's uninformed consent.[219] A reasonable person would not have understood the exchange between Luna and Trooper Nicholas as asking and granting permission to search Luna's semi-truck with backscatter X-ray technology.[220] Indeed, as this Comment has discussed, most citizens are not even aware that such technology exists.[221]

United States v. Silberman, although ultimately ending in a plea bargain before the court could decide the case on its merits,[222] offers another example of possible surreptitious use of a ZBV to search a vehicle during a traffic stop.[223]

The defendant, Douglas Silberman, was travelling eastbound on Interstate 70 in his recreational vehicle (RV) in Wabaunsee County, Kansas.[224] The Kansas Highway Patrol had posted "ruse drug check lane signs" as part of an effort to search vehicles who exited before reaching the checkpoint.[225]

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219. *See* Ronald Manto & Kristi Kassebaum, *X-Ray on Steroids—Circumscribing the Use of Technology*, CRIM. LAW. MIAMI FLA. BLOG (Nov. 15, 2010; 11:22 AM), http://www.criminallawyermiamiflorida.com/blog/?p=143 (mentioning the "possible surreptitious use of the backscatter x-ray followed by sham searches conducted with illegally obtained foreknowledge of the presence of contraband").

220. *Compare* Florida v. Jimeno, 500 U.S. 248, 251 (1991) (explaining that the scope of consent depends on what the suspect understood based on the exchange between the officer and the suspect), *with Luna*, 2011 WL 663062, at *2–3, *10 (detailing the exchange between Luna and Trooper Nicholas in which Luna consented to Trooper Nicholas searching his semi-truck).

221. *See supra* Part IV.B (commenting on the ZBV's covert nature and resulting lack of public awareness).

222. *See* Petition to Enter Plea of Guilty and Order Entering Plea at 9, United States v. Silberman, No. 10-CR-40089 (D. Kan. Sept. 12, 2011), ECF No. 34 [hereinafter Petition and Order] (pleading guilty to knowing and intentional possession with the intent to distribute less than ten kilograms of a controlled substance); *see also* Judgment as to Douglas R. Silberman at 2–3, United States v. Silberman, No. 10-CR-40089 (D. Kan. Feb. 21, 2012), ECF No. 55 [hereinafter Judgment as to Silberman] (sentencing the defendant to no jail time and three years of supervised release).

223. *See* Defendant's Motion to Suppress at 1–6, United States v. Silberman, No. 10-CR-40089 (D. Kan. Aug. 9, 2011), ECF No. 24 [hereinafter Motion to Suppress] (detailing the traffic stop, which involved use of a ZBV); *see also* Ronald Manto & Kristi Kassebaum, *The Anatomy of the Bust—Paying a Fourth Amendment Toll*, CRIM. LAW. MIAMI FLA. BLOG (Nov. 8, 2010; 11:05 AM), http://www.criminallawyermiamiflorida.com/blog/?p=59 (discussing the *Silberman* case and the "surreptitious police use of new backscatter x-ray technology at the scene of a 'textbook' pretextual traffic stop").

224. Motion to Suppress, *supra* note 223, at 1.

225. *See* Government's Consolidated Response to Defendants' Pretrial Motions at 1–2, United States v. Silberman, No. 10-CR-40089 (D. Kan. Aug. 26, 2011), ECF No. 31 [hereinafter Government's Response] (admitting the use of "ruse drug check lane signs"); *see also* United States v. Neff, 681 F.3d 1134, 1142–43 (10th Cir. 2012) (discussing police use of phony drug checkpoint signs and holding that the defendant's exit after seeing the

After exiting off of Interstate 70, Kansas Highway Patrol Trooper Bosley stopped Silberman's vehicle for allegedly failing to come to a complete stop at the bottom of the ramp.[226] Once Trooper Bosley activated his overhead lights, the in-car video camera activated and recorded the remaining events.[227] At the instruction of the troopers, Silberman backed his RV into an offroad area as Trooper Bosley parked his vehicle alongside the RV.[228]

After Trooper Bosley repositioned his vehicle, the video camera captured the presence of a large, white, unmarked ZBV parked on the road.[229] The ZBV can be seen a few yards away parked perpendicular to the RV.[230]

According to the Government, Trooper Bosley ran a search on Silberman's driver's license, possible warrants, and criminal history.[231] The search did not yield any warrants or prior convictions.[232] However, the search did reveal several records for prior suspected narcotics involvement including incidents in Texas, Nevada, and California.[233] Trooper Bosley returned to the RV and provided Silberman with a written warning for the stop sign violation.[234]

Trooper Bosley then informed Silberman that he and the other troopers at the scene were part of an interdiction team seeking to detect illegal activity on the highway.[235] Trooper Bosley then asked whether Silberman was carrying "anything illegal" inside his vehicle, to which Silberman replied, "I hope not."[236] Thereafter, Silberman consented to a search of the outside compartments of his RV.[237]

As Silberman opened the outside compartments for the troopers to search, another trooper approached Trooper Bosley

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drug checkpoint signs was "insufficient to support a finding of reasonable, articulable suspicion to stop [the defendant's] vehicle").

226. Motion to Suppress, *supra* note 223, at 1.

227. *Id.* at 2.

228. *Id.* at 2–3.

229. *Id.* at 3. The Government's Response to Defendant's Motion to Suppress does not dispute, nor mention the presence of a ZBV. *See* Government's Response, *supra* note 225 (failing to respond to the Defendant's contention that a ZBV was present at the scene).

230. Motion to Suppress, *supra* note 223, at 3.

231. Government's Response, *supra* note 225, at 5.

232. *Id.*

233. *Id.*

234. *Id.*

235. Motion to Suppress, *supra* note 223, at 4.

236. *Id.*

237. *Id.*

and pointed to the ZBV, asking if Trooper Bosley wanted to "look inside."[238] Silberman claims Trooper Bosley "seemed sensitive to his body microphone" during this exchange, and "place[d] his hand over his microphone as a non-verbal cue to his fellow officer to refrain from speaking."[239] During the search of the outside compartments, Trooper Bosley claimed he detected an odor of raw marijuana.[240] He also discovered evidence that suggested one of the metal walls of one of the compartments had been "removed and re-installed."[241]

Following these discoveries, Trooper Bosley requested Silberman's consent to search the interior of the RV.[242] Silberman responded "he would rather they . . . not."[243] Trooper Bosley responded by retaining Max, a certified narcotics detection canine, to sniff the vehicle.[244]

Before allowing Max to sniff the exterior of the vehicle, the troopers ordered an individual in the passenger seat to exit the RV.[245] After the individual exited the RV, the troopers left the RV's access door open.[246] Trooper Bosley unleashed Max and the canine began to sniff one of the outdoor compartments.[247] Although Trooper Bosley suspected that Max had signaled an alert, there was never a conclusive oral confirmation of an alert by any of the troopers.[248] Eventually, Max leaped inside the RV through the access door left open by the troopers.[249] Trooper Bosley followed Max into the interior of the RV, then around to the other side of the RV, before returning Max to the patrol car.[250]

Because Max allegedly alerted to a nonspecific narcotic odor, a full search of the interior of Silberman's RV followed as Trooper Bosley continued to question Silberman.[251] Pursuant to the search, troopers discovered numerous vacuum-sealed bags of marijuana under a bed.[252] In total, "approximately 442.7 pounds

238. *Id.* at 5.
239. *Id.*
240. *Id.*
241. Government's Response, *supra* note 225, at 6–7.
242. *Id.* at 8.
243. *Id.*
244. *Id.*
245. Motion to Suppress, *supra* note 223, at 5.
246. *Id.*
247. *Id.* at 5–6.
248. *Id.* at 6.
249. *Id.*
250. *Id.*
251. *Id.*
252. Government's Response, *supra* note 225, at 8–9.

of marijuana and approximately 8.9 pounds of hashish" were recovered from inside the RV.[253]

Despite Silberman's history of "prior narcotics involvement,"[254] and the large amount of marijuana found within his RV,[255] he was able to agree to a plea bargain that involved no jail time.[256] In addition, the Government never contested or even mentioned the presence of the ZBV in its response to Silberman's motion to suppress.[257] In light of the Government's rather lenient plea bargain and failure to confirm or deny the presence of a ZBV at the scene of the arrest, it appears that the Government may have desired to keep evidence regarding their practice of using ZBVs out of the court system.[258]

E. Implications of Surreptitious Use

Even if the Government did not pretextually utilize the ZBV in *Silberman*, the case illustrates how law enforcement could potentially use backscatter technology in conjunction with a pretextual traffic stop.[259] In theory, backscatter technology may give law enforcement the ability to covertly detect the presence of contraband within a vehicle before the traffic stop even occurs.[260]

For example, suppose a ZBV is used on a residential street and contraband is detected inside a vehicle outside a residence. Once detected, law enforcement would merely need to wait until a situation developed in which an officer is given "a reasonable suspicion supported by articulable facts that

253. *Id.* at 9–10.

254. *Id.* at 5.

255. *Id.* at 8–10.

256. *See* Petition and Order, *supra* note 222, at 9 (detailing Silberman's plea of guilty to possession with the intent to distribute less than ten kilograms of a controlled substance); *see also* Judgment as to Silberman, *supra* note 222, at 2–3 (sentencing the defendant to no jail time and three years of supervised release).

257. *See* Government's Response, *supra* note 225.

258. *See* Steve Watson, *Privacy Group Sues Big Sis over Secretive Mobile Body Scanners*, INFOWARS (May 26, 2011), http://www.infowars.com/privacy-group-sues-big-sis-over-secretive-mobile-body-scanners/ (discussing a lawsuit filed by the Electronic Privacy Information Center against the Department of Homeland Security for attempting to keep the program implementing backscatter technology in vans private, including withholding significant documents from Freedom of Information Act requests).

259. *See* Manto & Kassebaum, *supra* note 223 ("*Silberman* presents the rare case that raises serious issues of profiling and pretextual traffic stops *followed by unprecedented surreptitious use of new backscatter x-ray search technology on America's roads*.").

260. *Id.*

criminal activity 'may be afoot.'"[261] The Supreme Court has described this standard as "abstract" and not very difficult to meet.[262]

Once the vehicle has been pulled over, the officer would only need to establish probable cause to search the vehicle for the contraband—a relatively easy task considering the officer's foreknowledge that the vehicle contains contraband.[263] Such surreptitious use of backscatter technology on a vehicle would constitute a violation of the Fourth Amendment,[264] but would go completely undetected by the subject of the unreasonable search.[265]

Alternatively, even if the ZBVs were not utilized until after the initial vehicle stop as in *Luna*,[266] the driver of the vehicle may not realize that the unmarked white van at the scene is capable of searching through the walls of his or her vehicle.[267] Therefore, when the driver consents to a search, he or she may not realize they are consenting to a through-the-walls search involving a ZBV.[268] These potential, everyday scenarios illustrate how covert ZBVs dangerously threaten Americans' Fourth Amendment rights in a way that is designed to remain undetected.[269]

V. PROPOSED SOLUTIONS

Fortunately, there are simple solutions to the various privacy and Fourth Amendment issues created by ZBVs—"one of the most intrusive technologies conceivable."[270]

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261. *See* United States v. Sokolow, 490 U.S. 1, 7 (1989) (quoting Terry v. Ohio, 392 U.S. 1, 30 (1968)).

262. *See* United States v. Arvizu, 534 U.S. 266, 274 (2002) ("Although an officer's reliance on a mere hunch is insufficient to justify a stop . . . the likelihood of criminal activity need not rise to the level required for probable cause, and it falls considerably short of satisfying a preponderance of the evidence standard . . . ." (internal quotation marks omitted) (citations omitted)).

263. *See* Maryland v. Pringle, 540 U.S. 366, 371 (2003) (describing the standard of probable cause as "incapable of precise definition or quantification into percentages" and defining it as "a reasonable ground for belief of guilt").

264. *See Sokolow*, 490 U.S. at 7–8 (indicating that the articulable facts justifying the stop must exist before the stop occurs).

265. *See, e.g.*, Motion to Suppress, *supra* note 223, at 2–3 (describing a situation where officers searched a vehicle without notice to the driver that his vehicle was being searched by a ZBV).

266. United States v. Luna, No. 10 CR 176–1, 2011 WL 663062, at *1–3 (N.D. Ill. Feb. 14, 2011).

267. *See supra* Part IV.B (describing the ZBV's appearance and covert nature).

268. *See Luna*, 2011 WL 663062, at *8 ("Luna also contends that he 'never gave [the KHP officers] permission to go inside the walls of [his] truck.'" (alterations in original)).

269. *See supra* Part IV.B (describing the ZBV's appearance and covert nature).

270. Greenberg, *supra* note 12.

One solution may be gained from America's experience with AIT scanners at airports, which utilize the same technology.[271] Unlike ZBVs, public awareness of AIT scanners manifested as soon as they were put into use.[272] This is because of the noncovert nature of AIT scanners and the adequate information provided to passengers before they choose to utilize the technology over alternative screening procedures.[273] Public awareness gave way to public outcry over the privacy and safety concerns,[274] eventually resulting in litigation.[275] The public's response was so strong that recently, major airports have begun to remove the controversial body scanners.[276] Unlike AIT scanners, ZBVs have not attracted the general public's attention in the same way.[277] This is most likely due to its covert nature. Therefore, raising the public's awareness of ZBVs and the extent of their use is crucial to ensuring that the technology is used safely and legally.

Publishing more scholarly articles and news reports that document the presence and use of ZBVs is one way to increase public awareness. More importantly, however, the ZBV's covert nature must be stripped away. Although the vans are "designed for covert use,"[278] a justification for this intended design has not been offered. Joe Reiss, AS&E's vice president in marketing, explains that the vans comply with the industry standard because they have two lights that flash when a scan is in progress.[279]

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271. *See supra* Part III.B.2 (discussing the controversial use of backscatter technology at airports).

272. *See supra* notes 10, 139 and accompanying text (discussing the public outcry in response to airports' utilization of body scanners).

273. *See AIT: How It Works*, *supra* note 8 (discussing how AIT scanners work and how the TSA fully informs passengers of its presence and capabilities); TSAHQpublicaffairs, *AIT Screening*, YOUTUBE (May 22, 2013), http://www.youtube.com/watch?v=_c-v0PVtmrw; *see also* U.S. DEP'T OF HOMELAND SEC., PRIVACY IMPACT ASSESSMENT UPDATE FOR TSA ADVANCED IMAGING TECHNOLOGY 6 (2011), *available at* http://www.dhs.gov/xlibrary/assets/privacy/privacy-pia-tsa-ait.pdf ("At locations using AIT . . . TSA will post signs showing an image for the type of AIT being used . . . and informing that individuals may decline AIT in favor of physical screening.").

274. *See* Booth, *supra* note 11 ("In addition to privacy concerns, travelers were concerned about radiation exposure."); *supra* note 139 and accompanying text (discussing the public outcry in response to airports' utilization of body scanners).

275. *See supra* notes 140–43 and accompanying text (discussing lawsuits filed in response to the TSA's screening procedures involving body scanners).

276. Booth, *supra* note 11 (discussing the TSA's decision to remove the body scanners from "New York's Kennedy, LaGuardia and other major airports"); Martin, *supra* note 11 (reporting the TSA's decision to replace "full-body scanners that have been criticized for creating potential health risks and privacy violations").

277. *See supra* Part IV.B (discussing the covert nature and lack of public awareness).

278. Grabell, *supra* note 6.

279. *Id.*

The industry standard Reiss refers to is a consensus standard created by the Health Physics Society and the American National Standards Institute for "security screening systems."[280] It states that "[t]he institution operating the system shall inform each person being screened that the system emits radiation."[281] The standard also requires that "there be a visible indicator when X-rays are emitted," and that those being screened be told the radiation dose.[282] Unfortunately, this is a voluntary standard, and not a federal regulation.[283]

Although the Food and Drug Administration (FDA) regulates the manufacturers of electronic radiation emitting products sold in the United States,[284] it does not regulate their use.[285] Therefore, "even if a violation were discovered, there is little the FDA can do because the standard is voluntary and not a federal regulation."[286] As a result, law enforcement officers that utilize ZBVs are free to disregard the voluntary standards and remain undetected.[287]

Even if the standards were mandatory, two flashing lights do not indicate that the unmarked white van is a ZBV. Nor do the lights indicate that the otherwise unmarked ZBV is emitting backscatter X-rays while peering through its subject. Clearly, flashing lights do little to raise public awareness of the ZBV or unveil its covert nature.

If the main purpose of a ZBV is to scan cargo and vehicles,[288] it is difficult to think of many situations where law enforcement

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280. *See American National Standard N43.17: Radiation Safety for Personnel Security Screening Systems Using X-Rays*, HEALTH PHYSICS SOC'Y http://hps.org/hpssc/N43_17_2002.html (last updated Apr. 5, 2012) [hereinafter *American National Standard N43.17*].

281. Grabell, *supra* note 6; *see American National Standard N43.17*, *supra* note 280.

282. Grabell, *supra* note 6.

283. *Id.*

284. 21 C.F.R. §§ 1000, 1002–1004 (2012).

285. *See* Grabell, *supra* note 6 (stating that in New York, neither the FDA, nor the State, nor the New York City Department of Health regulated the use of ZBVs); *see also X-Ray & Particulate Products Other than Medical Diagnostic or Cabinet*, U.S. FOOD & DRUG ADMIN., http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/ucm116416.htm (last updated June 28, 2013) ("Use of electronic products that emit ionizing radiation is regulated either by the U.S. Occupational Safety & Health Administration or by State Government." (footnote omitted)).

286. Grabell, *supra* note 6; *see also X-Ray & Particulate Products Other than Medical Diagnostic or Cabinet*, *supra* note 285 (referring to the Health Physics Society standards as "voluntary radiation safety consensus standards"); *supra notes* 281–82.

287. Grabell, *supra* note 6.

288. *See ZBV*, *supra* note 73 (describing the ZBV as "the most maneuverable, versatile, and successful cargo and vehicle screening system on the market").

would need the scan to be done by a covert, unmarked "delivery van."[289] It is not a stretch to assume that at least one of the reasons ZBVs remain unmarked is that law enforcement intends to surreptitiously use them on unsuspecting subjects.[290]

State governments must pass legislation requiring law enforcement agencies that utilize ZBVs to properly label the sides of ZBVs with "Mobile X-ray Unit."[291] Labeling ZBVs as such will ensure that ordinary citizens are fully informed of every ZBV's presence and capabilities. This simple solution will adequately protect unsuspecting citizens from covert, unconstitutional use.

As we have seen in the example of AIT scanners, the courts provide another avenue for regulating police use of ZBVs.[292] Unlike *Luna*, the case presented to the court will need to be one in which a ZBV was used without consent, such as the situation *Silberman* potentially presented.[293] The defendant must be committed to taking the case all the way through trial instead of accepting a plea bargain like the defendant in *Silberman*.[294] Only then will a court be able to reach the merits of the case and rule on the ZBV's Fourth Amendment implications like the thermal image scanner in *Kyllo*.[295]

VI. CONCLUSION

Police use of ZBVs to search automobiles without a warrant or probable cause is a clear violation of the Fourth Amendment's

289. Macedo, *supra* note 167 (describing the ZBV as a "standard delivery van").

290. *See, e.g.*, Motion to Suppress, *supra* note 223, at 2–3 (describing a possible abuse of backscatter technology to intrude into a motor home); Manto & Kassebaum, *supra* note 223 (discussing the potential for "surreptitious police use of new backscatter x-ray technology at the scene of a 'textbook' pretextual traffic stop").

291. Grabell, *supra* note 6; *see also* Printz v. United States, 521 U.S. 898, 935 (1997) (holding that the federal government may not require the states, state departments, or state officers to follow, enact, or enforce a federal regulatory program).

292. *See supra* notes 140–43 and accompanying text (discussing lawsuits filed in response to the TSA's screening procedures involving body scanners).

293. *Compare* United States v. Luna, No. 10 CR 176–1, 2011 WL 663062, at *8–10 (N.D. Ill. Feb. 14, 2011) (holding that because Luna consented to the search of his semi-truck, the search utilizing x-ray technology did not violate the Fourth Amendment), *with* Part IV.D (discussing *United States v. Silberman*, where a ZBV was present at the scene and the events leading to the discovery of marijuana within the defendant's automobile hinted at the government's use of the ZBV).

294. *See* Petition and Order, *supra* note 222, at 9 (pleading guilty to knowing and intentional possession with the intent to distribute less than ten kilograms of a controlled substance).

295. *See infra* Part II.C (discussing *Kyllo v. United States*).

prohibition of unreasonable searches and seizures.[296] Furthermore, the potential for surreptitious use by police and police abuse of a suspect's scope of consent are serious threats to the protections provided by the Fourth Amendment.[297]

However the problem of police use of ZBVs is solved, whether through legislation, litigation, increased scholarship, or regulation, the key will be public awareness.[298] Public awareness is both a means and an end in itself.[299] Either increased public awareness will lead to litigation and regulation, or litigation and regulation will lead to increased public awareness.[300] Regardless of the method utilized to solve the problem, the end goal must be to strip ZBVs of their covert nature.[301]

Once the true nature of ZBVs is revealed, Americans can begin to feel confident that their Fourth Amendment rights are more adequately protected. Only then can law enforcement agencies be held accountable while possessing "one of the most intrusive technologies conceivable."[302] Together, transparency and accountability can resolve the problems that mobilized and covert backscatter technology has created. Backscatter technology has been taken to the streets; it's time for a detour through the courts and legislatures.

Scott W. Kendall

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296. *See* U.S. CONST. amend. IV.; *see also supra* Parts II.D, III.A (discussing Fourth Amendment searches as applied to automobiles and describing how backscatter X-ray imaging is capable of detecting lawful activity).

297. *See supra* Part IV.E (discussing the implications of surreptitious police use of ZBVs).

298. *See Children's Rights: A Guide to Strategic Litigation*, CHILD RIGHTS INT'L NETWORK 41 (2008), http://www.crin.org/docs/Childrens_Rights_Guide_to_Strategic_Litigation.pdf (last visited Nov. 17, 2013) (discussing how awareness is important to successful litigation with the goal of altering the law, and how litigation is a good way to raise awareness of an issue).

299. *Id*.

300. *Id.*

301. *See supra* Part III.B.2 (discussing the controversial use of backscatter technology at airports and how notice of the scanners to the public was necessary to overcome the legal issues associated with them); *see also* Booth, *supra* note 11 (noting TSA's recent decision to remove body scanners from several major airports).

302. Greenberg, *supra* note 12.