

February 1999

## The Loss of Privacy Is Just a Heartbeat Away: An Exploration of Government Heartbeat Detection Technology and Its Impact on Fourth Amendment Protections

George M. Dery III

Follow this and additional works at: <https://scholarship.law.wm.edu/wmborj>



Part of the [Fourth Amendment Commons](#)

---

### Repository Citation

George M. Dery III, *The Loss of Privacy Is Just a Heartbeat Away: An Exploration of Government Heartbeat Detection Technology and Its Impact on Fourth Amendment Protections*, 7 Wm. & Mary Bill Rts. J. 401 (1999), <https://scholarship.law.wm.edu/wmborj/vol7/iss2/4>

Copyright c 1999 by the authors. This article is brought to you by the William & Mary Law School Scholarship Repository.

<https://scholarship.law.wm.edu/wmborj>

# THE LOSS OF PRIVACY IS JUST A HEARTBEAT AWAY: AN EXPLORATION OF GOVERNMENT HEARTBEAT DETECTION TECHNOLOGY AND ITS IMPACT ON FOURTH AMENDMENT PROTECTIONS

George M. Dery III\*

*The Department of Energy has developed the "Enclosed Space Detection System" (ESDS), a search tool that enables officials to identify persons hidden inside vehicles at certain sensitive sites, such as nuclear facilities. ESDS operates by measuring the movements in vehicles generated by the beating of an occupant's heart.*

*This Article considers the Fourth Amendment privacy implications caused by the advent of a technology so advanced that it can probe all the way to one's heart. Specifically, this Article critically examines the Supreme Court's Fourth Amendment precedent concerning the definition of a "search" and the application of the "special needs" doctrine to assess the impact of the heartbeat detector on privacy.*

\* \* \*

## I. INTRODUCTION

The Oak Ridge National Laboratory has determined that a "highly trained terrorist" could evade a vehicle search and thus sneak inside a nuclear weapons plant.<sup>1</sup> According to United States agents, the following methods have foiled "cursory" physical searches of vehicles crossing at international borders: the concealment of illegal aliens behind vehicle dashboards; the wrapping of bodies around engines; and the use of humans as replacement for seat stuffing.<sup>2</sup> Four prisoners using a similar tactic "literally drove out the front gate" of Tennessee's Riverbend Maximum Security Institution, a prison holding some of the state's "toughest criminals."<sup>3</sup> These dangers, which implicate concerns as diverse as the security of the nuclear arsenal of the United States, the protection of the nation's

---

\* Associate Professor, California State University Fullerton, Division of Political Science and Criminal Justice; Former Deputy District Attorney, Los Angeles, California; J.D., Loyola Law School, Los Angeles, California, 1987; B.A., University of California, Los Angeles, 1983.

<sup>1</sup> Stephen W. Kercel et al., Comparison of Enclosed Space Detection System With Conventional Methods, Presentation Before the 13th Annual Security Technology Symposium, Virginia Beach, Virginia (June 9-12, 1997), at 2.

<sup>2</sup> See *id.*

<sup>3</sup> *The Tell-Tale Heart: Detector Picks Up Heartbeat of Hidden Humans* (posted Jan. 29, 1997) <[http://www.cnn.com/TECH/9701/29/t\\_tell.tale.heart/index.html](http://www.cnn.com/TECH/9701/29/t_tell.tale.heart/index.html)>.

borders from illegal immigration, and the safety of the citizenry from escaped convicts, take advantage of the same blind spot in law enforcement surveillance: the government's inability to detect the presence of a person or persons in enclosed vehicles. However, a new technology, originally developed for the Department of Energy, may plug this hole in security.<sup>4</sup>

This technological advance, called the Enclosed Space Detection System ("ESDS") and also known as the "Heartbeat Detector",<sup>5</sup> is so potentially significant that it has earned an award which its developer deemed "essentially . . . the Nobel Prize of inventions."<sup>6</sup> In fact, this device is so revolutionary that "no member of the ESDS development team has ever been made aware of an electronic device similar to ESDS."<sup>7</sup> The heartbeat detector's precision remains unmatched, having a "repeatable and reproducible reliability in excess of 99%."<sup>8</sup> Although extremely powerful, this new surveillance tool is quite simple to use and relatively inexpensive to operate.<sup>9</sup> Such simplicity and low cost could position the heartbeat detector for common use in any situation in which law enforcement harbors fears of persons concealing themselves in vehicles.

The very potency and versatility of this surveillance technology raises troubling Fourth Amendment concerns. A device which delves literally all the way to a person's heart without necessitating a physical search may require reconsideration of the United States Supreme Court's definition of a Fourth Amendment search. The development of the heartbeat detector may signal a significant expansion in the scope of the "special needs" exception to the traditional Fourth Amendment mandates of a warrant and probable cause. Finally, consideration of the ESDS may alter Supreme Court precedent regarding severe bodily intrusions by the government.

This Article examines the potential impact the heartbeat detector may have on Fourth Amendment mainstays. It begins, in Part II, with a description of the abilities of ESDS and an exploration of the circumstances in which this system may be employed. Part III presents a historical background of the Fourth Amendment doctrines that this new technology may touch. Finally, Part IV examines the implications the heartbeat detector may have in light of Supreme Court precedent.

---

<sup>4</sup> See Kercel et al., *supra* note 1, at 2.

<sup>5</sup> See OAK RIDGE NATIONAL LABORATORY, ENCLOSED SPACE DETECTION SYSTEM 1 (unpublished handout, on file with the *William & Mary Bill of Rights Journal*). The system also has been called AVIAN (Advanced Vehicle Interrogation and Notification System). See *Just a Heartbeat Away*, TECHBEAT (Nat'l Inst. of Justice, Nat'l Law Enforcement and Corrections Tech. Ctr., Rockville, Md.), Oct. 1997, at 1.

<sup>6</sup> *Just a Heartbeat Away*, *supra* note 5, at 2. See also *Searching for Hidden Hearts*, R&D MAG., Sept. 1997, at 62.

<sup>7</sup> OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 2.

<sup>8</sup> *Id.*

<sup>9</sup> The Oak Ridge National Laboratory asserted: "Operation [of ESDS] does not require specialized training." Kercel et al., *supra* note 1, at 1. Further, "the cost of ESDS is approximately 3% of the cost of conventional methods." *Id.* at 9.

## II. THE NEW HEARTBEAT DETECTION TECHNOLOGY

### A. *The Development of the Heartbeat Detector*

Nearly a century after the ratification of the Bill of Rights, an Englishman named J.W. Gordon watched the jiggling readings of a sensitive scale upon which he was standing and realized that a heartbeat's mechanical force was susceptible to measurement.<sup>10</sup> Still another century would pass, however, before this phenomenon would be harnessed for law enforcement surveillance. On August 22, 1996, investigators reported that the Department of Energy ("DOE"), prompted by security concerns, began an effort called "Portal of the Future," which focused on the prevention of terrorism, sabotage, and theft at sensitive sites around the nation.<sup>11</sup> The heartbeat detector formed a "key component" of the Portal of the Future system.<sup>12</sup>

The ESDS, or heartbeat detector, is a surveillance tool designed to detect the presence of people "hiding in enclosed spaces of vehicles" by identifying the presence of a "human ballistocardiogram."<sup>13</sup> With each beat of the human heart, a ballistocardiogram or a small mechanical shock wave propagates through the body.<sup>14</sup> This shock wave, in turn, causes the entire vehicle holding the person to vibrate "at a frequency dissimilar from any other source."<sup>15</sup>

The heart's ability to move an entire vehicle, even a big truck,<sup>16</sup> provides law enforcement with a previously unavailable window through which to view the contents of vehicles passing at various checkpoints. Officers can merely require known occupants to turn off the engine and exit the vehicle.<sup>17</sup> Then, such officers temporarily can place "sensitive seismic geophones"<sup>18</sup> on the "roof, bumper, or other flat surface" of the vehicle.<sup>19</sup> When a heartbeat's vibrations move a weight suspended in an electromagnetic field of a geophone, the reaction generates an

---

<sup>10</sup> See Stephen Strauss, *Trends: Detecting Stowaways* (last modified Jan. 1997) <<http://web.mit.edu/afs/athena/org/t/techreview/www/articles/jan97/trends.html>>.

<sup>11</sup> See Oak Ridge National Laboratory, *Oak Ridge's Portal of Future Putting Emphasis on Security* (last modified Aug. 22, 1996) <[http://www.ornl.gov/Press\\_Releases/archive/mr960822-00.html](http://www.ornl.gov/Press_Releases/archive/mr960822-00.html)>.

<sup>12</sup> See *id.*

<sup>13</sup> Wavelet Applications—Advanced Methods Group, *Enclosed Space Detection System (ESDS)* (visited Oct. 3, 1998) <<http://www.ic.ornl.gov/rd-groups/amg/esds.html>>.

<sup>14</sup> See *id.* See also OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 1.

<sup>15</sup> OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 1.

<sup>16</sup> See Strauss, *supra* note 10 ("[A] beating heart can perturb a tractor-trailer's walls.").

<sup>17</sup> See Wavelet Applications—Advanced Methods Group, *supra* note 13.

<sup>18</sup> OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 1. Geophones "are traditionally used by geologists to hunt for seismic signatures that reveal underground pockets of minerals." Strauss, *supra* note 16.

<sup>19</sup> Strauss, *supra* note 16.

electrical signal.<sup>20</sup> This signal then transmits to a computer that determines whether a beating heart concealed within the vehicle caused the small vibrations.<sup>21</sup>

The researchers at the Oak Ridge National Laboratory have determined that the human ballistocardiogram presents a particular pattern which features "several distinctive harmonic peaks [which vary] from about 50 to 150 beats per minute."<sup>22</sup> This unique signature enabled Oak Ridge to devise an algorithm to isolate and distinguish a beating heart from other signals.<sup>23</sup>

The Oak Ridge National Laboratory considers this device virtually foolproof: "Independent tests included deliberate attempts to spoof the device, including wrapping a person in quilted comforters or placing a person in the middle of a ton of garbage in a garbage truck. In every case, the ESDS was able to determine that a person was present."<sup>24</sup> Such performances have moved researchers to refer to success rates rarely heard of in science: "The ESDS has proven to be 100% effective in detecting persons hidden inside vehicles."<sup>25</sup> Consistent achievements in detection of the human heart have spurred developers to expand the reach of the heartbeat detector. Since then, ESDS has detected the heartbeats of dogs, cats, and mice.<sup>26</sup> This high level of sensitivity could open up a new application: detection of "endangered animals being illegally smuggled into the United States."<sup>27</sup>

Even if law enforcement limits itself to locating people, the potential scope of ESDS is impressive. A technology originally envisioned as a tool for safeguarding nuclear facilities has gone beyond even the expanded uses at prisons and borders. Indeed, the Oak Ridge National Laboratory loaned the heartbeat detector to the Atlanta Police Department for use during the 1996 Olympic Games.<sup>28</sup> To "encourage the widespread application of this system," the developer licensed the relevant software to GeoVox Security, Inc. to "develop and market a commercial version of the Heartbeat Detector."<sup>29</sup> The government, originally prompted by the DOE, thus not only has created a technology that enables law enforcement in various

---

<sup>20</sup> See *Just a Heartbeat Away*, *supra* note 5, at 2.

<sup>21</sup> See *id.*

<sup>22</sup> Strauss, *supra* note 16.

<sup>23</sup> *Id.* ("Given these characteristics, [the Oak Ridge researchers] devised a detection algorithm based on a common mathematical technique called wavelet analysis that is well known for its ability to distinguish impulse signals, even those spaced irregularly.").

<sup>24</sup> OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 1. Other materials used in these tests included mattresses and bubble wrap. See *Just a Heartbeat Away*, *supra* note 5, at 2.

<sup>25</sup> See *Just a Heartbeat Away*, *supra* note 5, at 2. Elsewhere, the success rate was stated slightly more conservatively as "99%+." See Kercel et al., *supra* note 1, at 1.

<sup>26</sup> See *Just a Heartbeat Away*, *supra* note 5, at 2. See also *Government Showcases Spy-Savvy Devices* (posted Mar. 10, 1998) <<http://cnn.com/TECH/science/9803/10/terrorism.detectors/index.html>>.

<sup>27</sup> *Just a Heartbeat Away*, *supra* note 5, at 2.

<sup>28</sup> See OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 1.

<sup>29</sup> *Id.*

jurisdictions throughout the country to eavesdrop upon a person's heart but, ultimately, has given a means for private concerns to do so.

*B. The Heartbeat Detector's Abilities in Relation to Current Search Methods*

The true magnitude of this new surveillance power is understood best through a comparison with alternative conventional methods for detection of individuals in vehicles. Currently, "the only method widely used to detect passengers concealed in vehicles is the [traditional] physical search."<sup>30</sup> A thorough physical search of even a "single fully loaded truck" requires the work of two to six people, over a period of up to eight hours.<sup>31</sup> Not only is this approach costly in terms of labor hours, it is not foolproof, for both intruders and escapees have been known to foil these search teams.<sup>32</sup>

A much more effective detection method is canine inspection which, under the best circumstances, is "about 80% reliable" in discovering concealed persons.<sup>33</sup> There are significant limits, however, constraining the widespread use of canines. First, reliable security dogs are scarce.<sup>34</sup> Each dog requires individual training in "only one of four possible jobs: drug detection, explosive detection, people detection, and arson investigation."<sup>35</sup> Moreover, many hours are spent not only on training dogs, but also on handling them. Identifying a dog's signal may necessitate interpretation and judgment by a trained handler.<sup>36</sup> Canine inspection thus requires the expenditure of time on educating humans about working with dogs.

Further, canines have "limited duty cycle[s]."<sup>37</sup> Labradors, the dogs with the most stamina, remain reliable "through a cycle of two hours on, one hour off, repeated for several cycles per day."<sup>38</sup> The reliability of other breeds, however, may fade after only thirty minutes.<sup>39</sup> The Oak Ridge National Laboratory estimates a dog's usefulness, in the best of circumstances, at around six hours per day.<sup>40</sup>

---

<sup>30</sup> Kercel et al., *supra* note 1, at 4.

<sup>31</sup> *See id.*

<sup>32</sup> *See id.* *See also The Tell-Tale Heart: Detector Picks Up Heartbeat of Hidden Humans*, *supra* note 3 (describing the escape of four inmates from a maximum security prison in Tennessee).

<sup>33</sup> OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 2.

<sup>34</sup> *See id.* at 3 (emphasis omitted).

<sup>35</sup> *Id.* However, Oak Ridge has been careful to note that dogs indeed may be trained for "multiple security tasks," yet it warns that the dogs, when they fail, "become equally unreliable at all of them." *Id.* at 3. *See also* Kercel et al., *supra* note 1, at 4-5.

<sup>36</sup> *See* OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 3.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> *See id.*

<sup>40</sup> *See id.*

Finally, canines are relatively vulnerable to conclusions of false negatives. A dog “provides no clear diagnostic for failure. If the dog catches a cold, it may show no external symptoms, but its sense of smell (and consequent level of reliability) may be greatly diminished, and neither the dog nor the handler may be aware of it.”<sup>41</sup>

ESDS, freed from many of the restrictions placed on conventional searches, stands in stark contrast to detection methods that rely on either humans or dogs. First, use of the heartbeat detector requires little training: “Any person competent enough to be a security guard can be trained to operate the system *in an hour*.”<sup>42</sup> Rather than necessitating the maintenance of an elite group of specialists, therefore, ESDS is employable by “regular guards” who use the detector “in addition to” their typical duties.<sup>43</sup> Unlike the nuances of canine searches, the heartbeat detector requires no special skill of judgment or interpretation, for it simply provides a “SEARCH” or “PASS” flag.<sup>44</sup> While dogs tire after a six-hour shift, ESDS is available for use twenty-four hours per day.<sup>45</sup> Finally, the heartbeat detector is immune to the infirmities that can diminish a canine’s effectiveness.<sup>46</sup> ESDS thus boasts a record of reliability at least nineteen percent more effective than the most conventional method currently available, at a fraction (some three percent) of its cost.<sup>47</sup>

### C. *The Potential Uses of the Heartbeat Detector*

#### 1. Protection of Nuclear Facilities

Two kinds of nuclear facilities exist in the United States: nuclear weapons plants controlled by the government, and power plants run by electric utility companies.<sup>48</sup> The DOE originally developed ESDS for use at government weapons plants, which might be attractive targets for terrorists.<sup>49</sup> The government was concerned that knowledgeable and zealous terrorists could foil physical inspections and thus precipitate a “criticality event” that could kill “hundreds of hostages.”<sup>50</sup> Meanwhile, private nuclear plants faced their own vulnerabilities; a single eco-terrorist could

---

<sup>41</sup> *Id.* (emphasis omitted).

<sup>42</sup> *Id.* (emphasis added).

<sup>43</sup> See Kercel et al., *supra* note 1, at 7.

<sup>44</sup> See OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 3.

<sup>45</sup> See *id.*

<sup>46</sup> See *id.*

<sup>47</sup> Whereas canines are about 80% reliable, ESDS possesses “the consistently repeatable 99% reliability.” Kercel et al., *supra* note 1, at 4. See *id.* at 7-9 for a full comparison of costs between human, canine, and ESDS methods.

<sup>48</sup> See OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 5-6.

<sup>49</sup> See *id.*

<sup>50</sup> *Id.* at 6.

cause a "serious release of radioactive contamination into the environment."<sup>51</sup> Thus, with the hope of averting such disasters, ESDS is being deployed in this context.<sup>52</sup>

## 2. Prevention of Escape from Prisons

After "informal discussions with prison authorities," the Oak Ridge National Laboratory has estimated that "an average of one successful escape per year per prison" occurs by inmates hiding in outgoing vehicles.<sup>53</sup> Of course, such incidents are quite costly in terms of public safety and security, as well as in terms of resources actually spent on capture.<sup>54</sup> Consequently, tests of ESDS are currently in progress at several correctional institutions.<sup>55</sup> Moreover, a heartbeat detector already has been sold for use in the British prison system.<sup>56</sup>

## 3. Controlling Illegal Immigration at International Border Crossings

The United States Immigration and Naturalization Service ("INS") believes that as many as nine out of ten attempts to smuggle illegal aliens through ports of entry are successful.<sup>57</sup> These attempts occur in spite of visual inspections by trained INS agents, which may delay traffic up to three hours.<sup>58</sup> Further, both agents and hidden passengers face dangers from physical searches.<sup>59</sup> Again, ESDS offers a reliable,

---

<sup>51</sup> *Id.*

<sup>52</sup> The use of the heartbeat detector to protect nuclear facilities may become international. The ESDS handout notes:

The curious reader may wonder if ESDS should not be employed in Russian nuclear weapons facilities. It probably will in the near future. The US-DOE has a program to assist the Russian government to upgrade its security of nuclear facilities. Unfortunately, up to now the program has to deal with more basic issues, such as obtaining locks that actually stay locked.

*Id.* at 6.

<sup>53</sup> *Id.* at 5.

<sup>54</sup> GeoVox Security, Inc., the licensee of the ESDS system, estimated the cost of recovery of inmates, even when found a few miles from prison, to be typically around \$100,000. *Id.*

<sup>55</sup> The Oak Ridge National Laboratory has noted:

ESDS is currently in long-term test and evaluation at several prisons, including the Riverbend Maximum Security Institution in Nashville TN, and Centinela State Prison in California. One unit has been sold commercially to the Police Scientific Development Branch of the UK Home Office for use in the British prison system.

*Id.* Further trials of ESDS are running at Pelican Bay Maximum Security Prison in California. See Strauss, *supra* note 10.

<sup>56</sup> See Kercel et al., *supra* note 1, at 3.

<sup>57</sup> See OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 4.

<sup>58</sup> See *id.*

<sup>59</sup> *Id.* ("There is risk to the agent as well as the concealed passenger. Inserting a hand into



quick, and inexpensive solution.<sup>60</sup> The heartbeat detector has been put on display at San Ysidro and Otay Mesa on California's border with Mexico.<sup>61</sup>

#### 4. Protection at Airports

The developers of ESDS have identified another need for their system: protection of airport sally ports from terrorist attack.<sup>62</sup> These ports grant entry, without inspection, to various support vehicles such as catering and fuel trucks.<sup>63</sup> The Oak Ridge National Laboratory considers such a port "literally an open door for terrorists . . . [a] hidden terrorist could wait for the proper moment, slip out of the [support] vehicle, sabotage an airplane, sneak into the same or another vehicle, exit the sally port, *and never be noticed*."<sup>64</sup> Once again, the ESDS developers offer the heartbeat detector as a quick (two minute) and inexpensive way to avert such dangers.<sup>65</sup>

### III. FOURTH AMENDMENT FUNDAMENTALS

#### A. *The Boundaries of Fourth Amendment Application*

1. The Evolving Definition of a Fourth Amendment "Search" from a "Physical Trespass onto a Constitutionally Protected Area" to a Government Intrusion on a Reasonable Expectation of Privacy

The Fourth Amendment,<sup>66</sup> the Bill of Rights' bulwark against official invasions of privacy and security, controls only the government abuse within its reach. Limited by its own terms to apply only to "searches and seizures,"<sup>67</sup> the Fourth Amendment is powerless against any misconduct falling outside of the Court's definitions of

---

a concealed space might lead to contact with anything, a syringe, a venomous animal, or even a body part.").

<sup>60</sup> *See id.*

<sup>61</sup> *See id.*

<sup>62</sup> *See id.* at 7.

<sup>63</sup> *See id.*

<sup>64</sup> *Id.* The Oak Ridge National Laboratory does not mince words regarding this danger: "One is tempted to regard this as culpable stupidity on the part of the airport operators." *Id.*

<sup>65</sup> *See id.*

<sup>66</sup> U.S. CONST. amend. IV. The Fourth Amendment provides:

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

*Id.*

<sup>67</sup> *Id.*

search and seizure. The threshold question of Fourth Amendment application, identifying which actions trigger a “search” or a “seizure,” thus has become such an important issue that it often is dispositive of the very outcome of a case.<sup>68</sup>

At one time, the boundaries of the Fourth Amendment could be “measured [quite literally] in fractions of inches.”<sup>69</sup> Such rigid clarity was due to the Court’s definition of a Fourth Amendment search as an actual physical “intrusion into a constitutionally protected area.”<sup>70</sup> However, a series of cases, involving technological enhancement of law enforcement’s sensory perception, strained the precise “constitutionally protected area” formulation to the breaking point.<sup>71</sup>

In *Olmstead v. United States*,<sup>72</sup> the United States Supreme Court reviewed a case of first impression concerning the Fourth Amendment implications of government wiretapping of “private telephone conversations.”<sup>73</sup> In *Olmstead*, federal prohibition agents gathered evidence of the defendants’ bootlegging activities by tapping into telephone lines leading from their private residences.<sup>74</sup> Because these taps were “made in the streets near the houses” rather than within the homes themselves, the Court deemed these intrusions as “made without trespass upon any property of the defendants.”<sup>75</sup> The intrusion without the physical trespass “did not amount to a search . . . within the meaning of the Fourth Amendment.”<sup>76</sup>

The Court adhered to its tangible “physical trespass” test in its next electronic eavesdropping case, *Goldman v. United States*.<sup>77</sup> In *Goldman*, federal agents, suspecting the defendant of violating the Bankruptcy Act,<sup>78</sup> placed a “detectaphone” against the wall partitioning their room from the one in which the defendant was making various incriminating statements.<sup>79</sup> The detectaphone, foretelling the sensitivity of Oak Ridge National Laboratory’s heartbeat detector, was “so delicate” that, “when placed against the . . . wall,” it could pick up sound waves generated

---

<sup>68</sup> For an example of the Court’s finding of the lack of a Fourth Amendment search as dispositive in a case, see *California v. Greenwood*, 486 U.S. 35, 39-41 (1987). Further, the failure to establish a “seizure” of the person was determinative in *California v. Hodari D.*, 499 U.S. 621, 626 (1991).

<sup>69</sup> See *Silverman v. United States*, 365 U.S. 505, 512 (1960), in which the Court attempted to respond to this charge, considered at the time as a criticism.

<sup>70</sup> *Silverman*, 365 U.S. at 512.

<sup>71</sup> See, e.g., *Goldman v. United States*, 316 U.S. 129 (1942); *Olmstead v. United States*, 277 U.S. 438 (1928).

<sup>72</sup> 277 U.S. 438 (1928).

<sup>73</sup> *Id.* at 455.

<sup>74</sup> See *id.* at 456-57.

<sup>75</sup> *Id.* at 457.

<sup>76</sup> *Id.* at 466.

<sup>77</sup> 316 U.S. 129 (1942).

<sup>78</sup> See *id.* at 131.

<sup>79</sup> See *id.* at 131-32.

inside the next room.<sup>80</sup> The Court, finding no physical trespass in connection with the relevant interception, identified “no reasonable or logical distinction . . . between what federal agents did in the present case and state officers did in the *Olmstead* case.”<sup>81</sup> Once again, because the government avoided crossing a physical boundary, it successfully avoided Fourth Amendment limitations.

By 1960, cracks started to show in the “physical trespass” boundary line. In *Silverman v. United States*,<sup>82</sup> police investigating a gambling operation penetrated the party wall of a home with a foot long “spike mike” until it came into contact with the home’s heating duct.<sup>83</sup> Police thus caused the duct to become a “giant microphone, running though the entire house . . .”<sup>84</sup> The Court deemed this eavesdropping “accomplished by means of an unauthorized physical penetration into the premises”<sup>85</sup> and thus distinct from earlier decisions that lacked this “physical encroachment within a constitutionally protected area.”<sup>86</sup> Even as the Court fully formulated the physical trespass test it had been crafting for over three decades, it seemed cognizant of the limitations of the test. The Court in *Silverman* recognized that, in previous decisions, only a “closely divided Court”<sup>87</sup> permitted electronic surveillance in cases regarding “physical encroachment within a constitutionally protected area.”<sup>88</sup> The Court in *Silverman* also noted criticisms that the physical intrusion standard essentially trivialized constitutional rights as hinging upon the technicalities of property boundaries.<sup>89</sup>

Thus, less than a decade after *Silverman*, the Court began to cast about for a new search standard to address advancing surveillance technology. In 1967, a Mr. Katz, while transmitting wagering information from a public telephone booth,<sup>90</sup> presented the Court with an opportunity to update its measurement of Fourth Amendment boundaries. In *Katz v. United States*, FBI agents placed “an electronic listening and recording device [on] the outside” of the phone booth frequented by the defendant.<sup>91</sup> To consider whether the government had committed a search of Katz’s conversations, the Court described any prior emphasis on property interests as “discredited”<sup>92</sup> and

---

<sup>80</sup> *Id.* at 131.

<sup>81</sup> *Id.* at 135.

<sup>82</sup> 365 U.S. 505 (1961).

<sup>83</sup> *See id.* at 506, 509.

<sup>84</sup> *Id.* at 509.

<sup>85</sup> *Id.*

<sup>86</sup> *Id.* at 510.

<sup>87</sup> *Id.*

<sup>88</sup> *Id.*

<sup>89</sup> *See id.* at 510, 512.

<sup>90</sup> *See Katz v. United States*, 389 U.S. 347, 348 (1967).

<sup>91</sup> *Id.*

<sup>92</sup> *Id.* at 353.

reduced the phrase “constitutionally protected area” to an “incantation.”<sup>93</sup> Indeed, focusing upon whether a particular piece of geography is a “constitutionally protected” area was “misleading,” for it deflected the inquiry from the true problem.<sup>94</sup> After all, noted the Court, the “Fourth Amendment protects people, not places.”<sup>95</sup> With the Court in *Katz* expending its energies upon laying waste to the physical trespass test, it fell to Justice Harlan to articulate a new definition of a Fourth Amendment search: “My understanding of the rule that has emerged from prior decisions is that there is a twofold requirement, first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as ‘reasonable.’”<sup>96</sup> This “reasonable expectation of privacy” test has become the accepted definition of a Fourth Amendment search for the last three decades.<sup>97</sup> Indeed, this formulation has become so standard that the Court routinely applies it with minimal discussion.<sup>98</sup> Therefore, the increasing power and sophistication of surveillance technology has prompted the Court to reject explicitly its concrete view of searches as physical intrusions of property boundaries in favor of a test focusing on people’s reasonable privacy expectations.

## 2. The Court Abandons the “Reasonable Expectation of Privacy” Standard for Canine Sniffs

At times, the Court has demonstrated a curious willingness to ignore its own rules regarding the boundaries of a Fourth Amendment search. The decision in *United States v. Place*<sup>99</sup> offered one of the clearest examples of this selective memory. In *Place*, the Court considered whether a canine’s sniff of personal luggage constituted a Fourth Amendment search.<sup>100</sup> After a brief mention of its well-established “legitimate expectations of privacy” standard, the Court simply failed to heed its prior dictate.<sup>101</sup> Instead of adhering to *Katz*’s two-pronged inquiry regarding

---

<sup>93</sup> *Id.* at 350.

<sup>94</sup> *See id.* at 351.

<sup>95</sup> *Id.*

<sup>96</sup> *Id.* at 361 (Harlan, J., concurring).

<sup>97</sup> *See* *Vernonia Sch. Dist. 47J v. Acton*, 515 U.S. 646, 652-53 (1995) (finding a lower expectation of privacy among student athletes); *Skinner v. Railway Labor Exec. Ass’n*, 489 U.S. 602, 617 (1989) (finding an expectation of privacy during urination); *Florida v. Riley*, 488 U.S. 445, 450 (1989) (finding no expectation of privacy for growing marijuana plants visible from an airplane); *Oliver v. United States*, 466 U.S. 170, 177 (1984); *Smith v. Maryland*, 442 U.S. 735, 743-46 (1979) (finding no expectation of privacy when dialing a telephone).

<sup>98</sup> *See* *Chandler v. Miller*, 117 S. Ct. 1295, 1301 (1997).

<sup>99</sup> 462 U.S. 696 (1982).

<sup>100</sup> *See id.* at 706-07.

<sup>101</sup> *See id.*

an individual's actual and reasonable privacy expectations in the area or item observed,<sup>102</sup> the Court merely contrasted a sniff of a "well-trained narcotics detection dog" with a human officer's "rummaging through the contents of . . . luggage."<sup>103</sup> The "manner" of a dog's "investigation technique" was "much less intrusive than a typical search" for it did not require the actual opening of luggage and, therefore, did not expose legitimately held items to public view.<sup>104</sup> Additionally, the dog's sniff presented authorities with only "limited" information—whether narcotics were present or absent from a particular set of baggage.<sup>105</sup> Police thus only learned about the existence of drugs which, by their nature, were illegal to possess.<sup>106</sup> Finally, the surgical precision of the canine sniff eliminated the "embarrassment and inconvenience" entailed in a traditional luggage search.<sup>107</sup>

All these considerations were true, yet irrelevant. According to the holding of *Katz* and its progeny, the issue was whether a dog's sniff intruded upon an expectation of privacy actually held by the possessor of the luggage and reasonably held by society at large. Such an inquiry would have to involve a consideration of whether one could expect that police could detect non-metallic items concealed in opaque suitcases as people held or carried the bags in airports. The answer to this query is clear: Neither police, nor anyone else, can determine the contents of closed luggage. Indeed, that is the very reason authorities employ specially trained canines in this context. Thus, dogs do intrude upon reasonable privacy expectations when they sniff bags at airports. This intrusion exists regardless of whether police physically are able to commit a more intrusive search by opening luggage.

Any damage done by the holding in *Place* to the reasonable expectation of privacy test from *Katz* seemed contained at first, for the Court viewed canine sniffs as so precise as to be *sui generis*.<sup>108</sup> However, the targeted inquiry concept from *Place* would surface in yet another case, *United States v. Jacobsen*.<sup>109</sup> In *Jacobsen*, officers performed a field test on white powder to determine whether it was a controlled substance.<sup>110</sup> The Court echoed the finding in *Place*: "The governmental conduct that can reveal whether a substance is cocaine, and no other arguably 'private' fact, compromises no legitimate privacy interest."<sup>111</sup> The holding of the two cases crafted the following exception to the *Katz* definition of a search: If the

---

<sup>102</sup> See *Katz v. United States*, 389 U.S. 347, 361 (1967) (Harlan, J., concurring).

<sup>103</sup> *Place*, 462 U.S. at 707.

<sup>104</sup> *Id.*

<sup>105</sup> See *id.*

<sup>106</sup> The Court noted that the canine sniff "discloses only the presence or absence of narcotics, a contraband item." *Id.*

<sup>107</sup> *Id.*

<sup>108</sup> See *id.*

<sup>109</sup> 466 U.S. 109 (1984).

<sup>110</sup> See *id.* at 113.

<sup>111</sup> *Id.* at 123.

government's investigation techniques were so precise as to identify nothing but illegally-possessed items, then the surveillance did not constitute a search and, therefore, did not trigger application of the Fourth Amendment in the first place.

### 3. Judicial Backsliding from "Reasonable Expectation of Privacy" to "Physical Invasion" in Aerial Surveillance Cases

The Court has experienced difficulty in remaining faithful to its abstract notion of reasonable expectation of privacy in the face of the simpler, more concrete concept of physical invasion. In fact, in cases in which the Court has considered individual privacy interests beyond the exterior walls of homes, the Justices actually have begun to recognize constitutionally protected areas again. When considering whether police entry on to large tracts of private land constituted a search, the Court in *Oliver v. United States*<sup>112</sup> recognized that the Fourth Amendment extended beyond a person's home to include "curtilage":

[C]urtilage, not the neighboring open fields, warrants the Fourth Amendment protections that attach to the home. At common law, the curtilage is the area to which extends the intimate activity associated with the "sanctity of a man's home and the privacies of life," . . . and therefore has been considered part of the home itself for Fourth Amendment purposes. Thus, courts have extended Fourth Amendment protection to the curtilage; and they have defined the curtilage, as did the common law, by reference to the factors that determine whether an individual reasonably may expect that an area immediately adjacent to the home will remain private.<sup>113</sup>

The Court thus had incorporated the centuries-old concept of curtilage into *Katz*'s reasonable expectation of privacy doctrine. Consequently, because a person reasonably could expect privacy in his or her curtilage, identifying the boundaries of curtilage took on constitutional significance. Providing a formula for determining these boundaries fell to the Court in *United States v. Dunn*<sup>114</sup> when it offered a four-part test:

[W]e believe that curtilage questions should be resolved with particular reference to four factors: the proximity of the area claimed to be curtilage to the home, whether the area is included within an enclosure surrounding the home, the nature of the uses to which the area is put, and the steps

---

<sup>112</sup> 466 U.S. 170 (1984).

<sup>113</sup> *Id.* 180 (1984) (citations omitted).

<sup>114</sup> 480 U.S. 294 (1987).

taken by the resident to protect the area from observation by people passing by.<sup>115</sup>

Two factors in this test invite a return to viewing Fourth Amendment protection as involving the crossing of tangible boundaries. Defining the outer limit of Fourth Amendment protection, curtilage was to be identified, in part, by the “proximity” of the area in question to the house.<sup>116</sup> This kind of distance measure seems uncomfortably close to the “inches” analysis in *Silverman*. The second factor, “whether the area is included within an enclosure surrounding the home,”<sup>117</sup> invites taking this enclosure as the outer physical boundary of curtilage.

The Court’s tendency toward tangible boundaries became even more apparent with the advent of aerial surveillance. In *California v. Ciraolo*,<sup>118</sup> an officer flying a fixed-wing plane at 1,000 feet made a naked eye observation of marijuana in the defendant’s curtilage.<sup>119</sup> Despite the fact that the government had made a visual intrusion upon an individual’s curtilage, the Court declined to find the officer’s activity amounted to a search, for the defendant’s privacy expectation in his curtilage was not one “society is prepared to honor.”<sup>120</sup> This holding was no fluke. Three years later, the Court confirmed its *Ciraolo* approach in *Florida v. Riley*,<sup>121</sup> in which an officer made a naked-eye observation of contraband from a helicopter flying at 400 feet.<sup>122</sup> The Court’s basis for the holding in *Riley* seemed to come out of a time warp: “[T]he home and its curtilage are not necessarily protected from inspection that involves no physical invasion.”<sup>123</sup> In applying the *Katz* reasonable expectation of privacy standard, the Court undermined the very foundations of this rule by articulating explicitly the physical invasion doctrine.

---

<sup>115</sup> *Id.* at 301. The Court did caution against treating this test as mathematically precise: We do not suggest that combining these factors produces a finely tuned formula that, when mechanically applied, yields a “correct” answer to all extent-of-curtilage questions. Rather, these factors are useful analytical tools only to the degree that, in any given case, they bear upon the centrally relevant consideration—whether the area in question is so intimately tied to the home itself that it should be placed under the home’s “umbrella” of Fourth Amendment protection.

*Id.*

<sup>116</sup> *See id.*

<sup>117</sup> *Id.*

<sup>118</sup> 476 U.S. 207 (1986).

<sup>119</sup> *See id.* at 210.

<sup>120</sup> *Id.* at 214.

<sup>121</sup> 488 U.S. 445 (1989).

<sup>122</sup> *See id.* at 445.

<sup>123</sup> *Id.* at 449.

## B. *The Warrant Requirement*

### 1. The Court's General Presumption in Favor of Warrants

In structuring the Fourth Amendment, the Framers crafted a kind of political Rorschach test that tended to reveal more about the judicial philosophies of the Court's interpretations of the Amendment than it did about the original intent of the founders. The Fourth Amendment consists of two clauses, each containing its own restrictions on government action. The first clause, known as the Reasonableness Clause,<sup>124</sup> aims to control officialdom with a general principle: "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated . . . ."<sup>125</sup> In contrast, the second clause, referred to as the Warrant Clause,<sup>126</sup> focuses on details: "[N]o Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized."<sup>127</sup> The Framers left the relationship between the Fourth Amendment's two mandates an unsolvable mystery, for they merely connected the Amendment's two clauses with an ambiguous "and."<sup>128</sup>

The Court thus has the unenviable task of determining whether the reasonableness required by the Founders provides a yardstick of government legality by itself or, instead, whether it is a standard given meaning only by the concrete guidelines specifically delineated in the Warrant Clause. Without a clear signal from the text, the Justices must apply their own valuation of the competing Fourth Amendment interests of society and of the individual in their efforts to harmonize the two clauses.<sup>129</sup>

---

<sup>124</sup> See Scott E. Sundby, *A Return to Fourth Amendment Basics: Undoing the Mischief of Camara and Terry*, 72 MINN. L. REV. 383, 383 (1988).

<sup>125</sup> U.S. CONST. amend. IV. See also Sundby, *supra* note 122, at 384 n.4.

<sup>126</sup> See Sundby, *supra* note 122, at 384.

<sup>127</sup> U.S. CONST. amend. IV. See also Sundby, *supra* note 122, at 384 n.4.

<sup>128</sup> See *id.*

<sup>129</sup> Scott Sundby offered the following discussion of the Court's struggle to understand the competing clauses' interrelationship:

Although the challenge of reconciling the warrant and reasonableness clauses appears elementary, the Court's inability to meet the challenge is understandable considering that the task goes to the very core of the amendment's meaning and purpose. Reconciling the clauses requires balancing the citizenry's privacy interest against the government's power to intrude in pursuing important government objectives. If the Court assigns the warrant clause the greater role in [F]ourth [A]mendment analysis, the warrant and probable cause requirements will restrict the government's right to intrude. On the other hand, if the Court primarily relies on a general reasonableness standard, the obstacles of obtaining a warrant and proving probable cause are removed, and the scope of valid



Historically, the Court has interpreted the Warrant Clause as the motivational power of the Fourth Amendment which provides definition to reasonableness. At mid-century, Justice Frankfurter explained the need for the Warrant Clause's tangible tethers on government conduct:

To say that the search must be reasonable is to require some criterion of reason. It is no guide at all . . . to say that an "unreasonable search" is forbidden—that the search must be reasonable. What is the test of reason which makes a search reasonable? The test is the reason underlying and expressed by the Fourth Amendment: the history and the experience which it embodies and the safeguards afforded by it against the evils to which it was a response. There must be a warrant to permit search, barring only inherent limitations upon that requirement when there is a good excuse for not getting a search warrant.<sup>130</sup>

Such reasoning prompted the Court to accept unanimously as established fact a general preference for warrants.

The Fourth Amendment proscribes all unreasonable searches and seizures; and it is a cardinal principle that "searches conducted outside the judicial process, without prior approval by a judge or magistrate, are *per se* unreasonable under the Fourth Amendment—subject only to a few specifically established and well-delineated exceptions."<sup>131</sup> The Court has found the security specifically provided by the Warrant Clause to be so crucial to individual privacy that it has articulated explicitly the warrant preference as recently as 1994: "Where a search is undertaken by law enforcement officials to discover evidence of criminal wrongdoing, this Court has said that reasonableness generally requires the obtaining of a judicial warrant."<sup>132</sup>

---

government intrusions broadens. The two clauses thus strike different balances between the citizenry's privacy interests and the government's police power, and emphasizing one clause or the other will reflect the different balances. In many ways, to decide how the two clauses interrelate is to determine the fourth amendment's values and purposes.

*Id.* (footnote omitted). For further consideration of the Court's difficulties in this arena, see Akhil Reed Amar, *Fourth Amendment First Principles*, 107 HARV. L. REV. 757 (1994); and Craig M. Bradley, *Two Models of the Fourth Amendment*, 83 MICH. L. REV. 1468 (1985).

<sup>130</sup> United States v. Rabinowitz, 339 U.S. 56, 83 (1950) (Frankfurter, J., dissenting), overruled by *Chimel v. California*, 395 U.S. 752 (1969). Although this language was contained in a dissenting opinion, portions of it were adopted later by a majority of the Court in the seminal case involving search incident to arrest. See *Chimel v. California*, 395 U.S. 752, 765 (1969) (quoting *Rabinowitz*, 339 U.S. at 83). Further, the Court had referred to a warrant preference as early as 1925. See *Agnello v. United States*, 269 U.S. 20, 32 (1925).

<sup>131</sup> *Mincey v. Arizona*, 437 U.S. 385, 390 (1978) (quoting *Katz v. United States*, 389 U.S. 347, 357 (1967)).

<sup>132</sup> *Vernonia Sch. Dist. 47J v. Acton*, 515 U.S. 646, 653 (1995).

The Warrant Clause thus has enjoyed center stage for nearly three-quarters of this century.

## 2. The Reasonableness Alternative in Areas of “Special Needs”

The Warrant Clause’s primacy was not established without challenge from competing arguments favoring the Reasonableness Clause. Indeed, Justice Frankfurter advanced his reasonableness view, as defined by the Warrant Clause, in a dissenting opinion in *United States v. Rabinowitz*.<sup>133</sup> In *Rabinowitz*, the typically disfavored view of reasonableness as a standard in its own right won the day:

It is appropriate to note that the Constitution does not say that the right of the people to be secure in their persons should not be violated without a search warrant if it is practicable for the officers to procure one. The mandate of the Fourth Amendment is that the people shall be secure against *unreasonable* searches.<sup>134</sup>

However, the most dramatic victories on the reasonableness front occurred in a series of cases perceived as so unique that the Court relegated them to the margins of Fourth Amendment protection. These so-called special needs cases did not involve the mainstay of Fourth Amendment litigation: law enforcement searches for evidence in criminal investigations.<sup>135</sup> Instead, they concerned other government interests such as the maintenance of safe housing in cities<sup>136</sup> and proper educational environments in schools.<sup>137</sup> Because the government intrusions on individuals in these cases did not fall within the typical ambit of criminal investigation, the Court did not confine its reasoning to the traditional mandates of warrants and probable cause.

---

<sup>133</sup> 339 U.S. at 83 (Frankfurter, J., dissenting), *overruled by* *Chimel v. California*, 395 U.S. 752 (1969).

<sup>134</sup> *Id.* at 65.

<sup>135</sup> Justice Blackmun offered the following explanation for special needs balancing: I believe that we have used such a balancing test, rather than strictly applying the Fourth Amendment’s Warrant and Probable-Cause Clause, only when we were confronted with “a special law enforcement need for greater flexibility.” Only in those exceptional circumstances in which special needs, beyond the normal need for law enforcement, make the warrant and probable-cause requirement impracticable, is a court entitled to substitute its balancing of interests for that of the Framers.

*New Jersey v. T.L.O.*, 469 U.S. 325, 351 (1985) (Blackmun, J., concurring) (quoting *Florida v. Royer*, 460 U.S. 491, 514 (1983) (Blackmun, J., dissenting)).

<sup>136</sup> See *Camara v. Municipal Court*, 387 U.S. 523 (1967).

<sup>137</sup> See *T.L.O.*, 469 U.S. at 325.

A case that caught the Court in transition from emphasizing warrants to focusing on reasonableness was *Camara v. Municipal Court*.<sup>138</sup> In this case, a San Francisco housing inspector demanded entry into Camara's residence.<sup>139</sup> Camara refused inspection without a search warrant, and the refusal ultimately resulted in his arrest for failure to permit inspection under the city's housing code.<sup>140</sup> Camara argued that he could not be convicted for refusing what amounted to an unconstitutional demand for entry.<sup>141</sup>

The Court's opinion, authored by Justice White, began with the usual warrant preference: "[E]xcept in certain carefully defined classes of cases, a search of private property without proper consent is 'unreasonable' unless it has been authorized by a valid search warrant."<sup>142</sup> The Court then took great pains to explain that the Fourth Amendment's application was not limited to criminal cases: "We may agree that a routine inspection of the physical condition of private property is a less hostile intrusion than the typical policeman's search for the fruits and instrumentalities of crime."<sup>143</sup> However, this fact did not cause the Court to suspend Fourth Amendment application in non-criminal matters. The Court asserted: "It is surely anomalous to say that the individual and his private property are fully protected by the Fourth Amendment only when the individual is suspected of criminal behavior."<sup>144</sup>

Interestingly, in *Camara*, the Court went on to reject explicitly the reasoning that the Court itself had crafted in an earlier case, *Frank v. Maryland*.<sup>145</sup> In *Frank*, the Court suggested that, because housing inspections were not directed at gathering evidence of a crime, any Fourth Amendment interests at stake in such cases were "merely 'peripheral.'"<sup>146</sup> Justice White disagreed and noted that, although the inspection statute was not designed to gather evidence of crime, this regulatory law was enforced by *criminal* sanctions.<sup>147</sup> Indeed, in that case, the government was prosecuting Camara for the crime of refusal to permit entry of an inspector.<sup>148</sup> Justice White found unconvincing the previous justifications, in *Frank*, for dispensing with a warrant. He noted that the holding in *Frank* suggested that "these inspections are 'designed to make the least possible demand on the individual occupant'" and are "hedged with safeguards," and that "the warrant process could not function

---

<sup>138</sup> 387 U.S. 523 (1967).

<sup>139</sup> See *id.* at 526.

<sup>140</sup> See *id.* at 527.

<sup>141</sup> See *id.* at 525.

<sup>142</sup> *Id.* at 528-29.

<sup>143</sup> *Id.* at 530.

<sup>144</sup> *Id.*

<sup>145</sup> 359 U.S. 360 (1959), *overruled by* *Camara v. Municipal Court*, 387 U.S. 523 (1967).

<sup>146</sup> *Camara*, 387 U.S. at 530.

<sup>147</sup> See *id.* at 531.

<sup>148</sup> See *id.*

effectively in this field.”<sup>149</sup> *Camara* determined that such conclusions were based on a misunderstanding of the purposes behind the warrant.<sup>150</sup>

The Court in *Camara* identified a variety of functions served by warrants: They inform citizens of the laws justifying official intrusion, the lawful limits of the search, and the authority of the person seeking entry.<sup>151</sup> Without such authorization from a neutral magistrate, the “official in the field” would have the discretion to intrude upon a citizen who was unaware of his privacy rights.<sup>152</sup> Justice White condemned this as “precisely the discretion to invade private property which we have consistently circumscribed by a requirement that a disinterested party warrant the need to search.”<sup>153</sup> The Court’s holding in *Camara* deemed warrants so vital that the government assertion that “the public interest demands” warrantless searches as “the only effective means” for carrying out the goal of housing inspections was subject to “careful consideration.”<sup>154</sup> The burden in this case remained with the government, and its level of proof was indeed high: The state had to establish that “the burden of obtaining a warrant is likely to *frustrate* the governmental purpose behind the search.”<sup>155</sup>

After reasserting the established doctrine of Warrant Clause primacy, the Court then proceeded to undermine it in *Camara*. The Court altered the “probable cause” needed to sustain a warrant in an administrative setting from an examination of specific facts supporting a search of a particular place to a nebulous “reasonableness” determination.<sup>156</sup> Reasonableness, in turn, deteriorated into a weighing process: “Unfortunately, there can be no ready test for determining reasonableness other than by balancing the need to search against the invasion which the search entails.”<sup>157</sup> In the administrative warrant context, an entirely new kind of probable cause, one based on balancing interests, was born.

Ironically, in the face of Justice White’s language defending the sanctity of the warrant requirement, *Camara*’s administrative warrant ultimately opened the way for “administrative searches” lacking any prior judicial approval.<sup>158</sup> In this context, an administrative search case of particular note is *New York v. Burger*.<sup>159</sup> In *Burger*, officers entered to inspect an automobile junkyard without a warrant.<sup>160</sup> Justice

---

<sup>149</sup> *Id.* at 531-32.

<sup>150</sup> *See id.* at 532.

<sup>151</sup> *See id.*

<sup>152</sup> *See id.*

<sup>153</sup> *Id.* at 532-33.

<sup>154</sup> *Id.* at 533.

<sup>155</sup> *Id.* (emphasis added).

<sup>156</sup> *See id.* at 534-35.

<sup>157</sup> *Id.* at 536-37.

<sup>158</sup> *See New York v. Burger*, 482 U.S. 691, 700 (1987).

<sup>159</sup> *Id.*

<sup>160</sup> *See id.* at 694-95.

Blackmun, who wrote the Court's opinion, determined that this junkyard constituted a "closely regulated" industry.<sup>161</sup> Traditionally, this label was given only to "[c]ertain industries" which had "such a history of government oversight that no reasonable expectation of privacy could exist for a proprietor over the stock of such an enterprise."<sup>162</sup> The liquor industry presented an example of a business experiencing this "long tradition of close government supervision."<sup>163</sup> Over time, however, the Court de-emphasized the length-of-oversight requirement, focusing instead on "the pervasiveness and regularity of the . . . regulation."<sup>164</sup>

Whether the label is "closely" or "pervasively" regulated, its significance is certain, for once a business is so categorized, its owners lose not only the right to traditional probable cause, but to any warrant whatsoever:

Because the owner or operator of commercial premises in a "closely regulated" industry has a reduced expectation of privacy, the warrant and probable-cause requirements, which fulfill the traditional Fourth Amendment standard of reasonableness for a government search have lessened application in this context. Rather, we conclude that, as in other situations of "special need," where the privacy interests of the owner are weakened and the government interests in regulating particular businesses are concomitantly heightened, a warrantless inspection of commercial premises may well be reasonable within the meaning of the Fourth Amendment.<sup>165</sup>

Another pioneer case in the substitution of reasonableness balancing for the Warrant Clause's fundamentals was *New Jersey v. T.L.O.*<sup>166</sup> The Court in *T.L.O.* considered the validity of a school official's recovery of marijuana from a student's purse.<sup>167</sup> The school administrator, Mr. Choplick, was not acting as a police officer at the time of his search: Instead, he ventured into the student's purse for cigarettes

---

<sup>161</sup> *Id.* at 707. These enterprises also have been called, "pervasively regulated business[es]." *Id.* at 702.

<sup>162</sup> *Id.* at 700 (quoting *Marshall v. Barlow's, Inc.*, 436 U.S. 307, 313 (1978)).

<sup>163</sup> *Id.*

<sup>164</sup> *Id.* at 701 (quoting *Donovan v. Dewey*, 452 U.S. 594, 606 (1981)).

<sup>165</sup> *Id.* at 702 (citations omitted). Interestingly, the Court in *Burger* explicitly stated that administrative searches were included in the "special needs" cases. *See id.* (citing *New Jersey v. T.L.O.*, 469 U.S. 325, 353 (1985) (Blackmun, J., concurring)). As later cases indicate, "special needs" became the preferred rubric.

<sup>166</sup> 469 U.S. 325 (1985).

<sup>167</sup> *See id.* at 327-28. Along with the marijuana in the student's purse, the school official, Assistant Vice Principal Theodore Choplick, found cigarettes, rolling papers, a pipe, some empty plastic bags, a "substantial quantity" of one-dollar bills, and various papers implicating the student in marijuana dealing. *See id.* at 328.

in order to enforce a school disciplinary rule prohibiting smoking in the girls' bathroom.<sup>168</sup> The context of this search became crucial.

Although Justice White, writing for the Court, deemed an intrusion into a student's purse "undoubtedly a severe violation of subjective expectations of privacy," he also recognized the "substantial interest of teachers and administrators in maintaining discipline in the classroom and on school grounds."<sup>169</sup> This governmental interest in "maintaining security and order in the schools," beyond the run-of-the-mill needs of law enforcement, required "some easing of the restrictions to which searches by public authorities are ordinarily subject."<sup>170</sup> The Court endeavored to "strike the balance" between the interests of school and schoolchild.<sup>171</sup> In weighing the competing concerns, the Court in *T.L.O.* concluded that the "warrant requirement, in particular, [was] unsuited to the school environment" and that the "school setting also require[d] some modification of the level of suspicion of illicit activity needed to justify a search."<sup>172</sup> The Court's holding in *T.L.O.* was unabashed in its abandonment of the Warrant Clause's requirements: "Where a careful balancing of governmental and private interests suggests that the public interest is best served by a Fourth Amendment standard of reasonableness that stops short of probable cause, we have not hesitated to adopt such a standard."<sup>173</sup>

Later special needs cases "stopped short" not only of probable cause, but also of any degree of individualized suspicion. The Court, in *Skinner v. Railway Labor Executives' Ass'n*,<sup>174</sup> *National Treasury Employees Union v. Von Raab*,<sup>175</sup> and *Vernonia School District 47J v. Acton*,<sup>176</sup> upheld warrantless searches based on no individualized suspicion whatsoever.<sup>177</sup> Such reasonableness balancing was particularly remarkable in light of the extreme level of government intrusion involved; each of these cases concerned an activity traditionally accorded great privacy: compelled urinalysis drug testing.<sup>178</sup>

These cases, initially forming merely a "special needs" exception to the general requirement for a warrant, were left unattended in a petri dish in the Court's Fourth Amendment laboratory. The dangers of these holdings remained ignored over time,

---

<sup>168</sup> See *id.* at 328.

<sup>169</sup> *Id.* at 338-39.

<sup>170</sup> *Id.* at 340.

<sup>171</sup> See *id.*

<sup>172</sup> *Id.*

<sup>173</sup> *Id.* at 341.

<sup>174</sup> 489 U.S. 602 (1989).

<sup>175</sup> 489 U.S. 656 (1989).

<sup>176</sup> 515 U.S. 646 (1995).

<sup>177</sup> See *Vernonia Sch. Dist. 47J v. Acton*, 515 U.S. 646, 663 (1995); *Skinner v. Railway Labor Exec. Ass'n*, 489 U.S. 602, 631 (1989); *National Treasury Employees Union v. Von Raab*, 489 U.S. 656, 679 (1989).

<sup>178</sup> See *Acton*, 515 U.S. at 646; *Skinner*, 489 U.S. at 602; *Von Raab*, 489 U.S. at 656.

and special needs began to fester into an organism which threatened to take over the Court's entire lab. In 1997, the Court aimed to stem the tide of special needs contagion in *Chandler v. Miller*, a case in which candidates for state office were compelled to provide urine samples for drug testing.<sup>179</sup> The majority's *Chandler* opinion, however, failed to acknowledge openly the subjectivity of special needs, choosing instead to exploit this doctrine's very malleability as an opportunity to reinterpret its boundaries.<sup>180</sup> The Court's loss of resolve, in *Chandler*, to admit the decades-long failure of its special needs experiment resulted not only in a missed opportunity to return to the clarity of Fourth Amendment fundamentals; it marked the point at which the language of special needs lost all credible meaning.

#### IV. THE HEARTBEAT DETECTOR'S POTENTIAL IMPACT ON FOURTH AMENDMENT PROTECTIONS

##### A. *Use of The Heartbeat Detector May Require a Reassessment of What Constitutes a Fourth Amendment Search*

The Oak Ridge National Laboratory's ESDS empowers the government to intrude upon a person, quite literally, all the way to his or her heart. However, whether Fourth Amendment reasonableness even covers such an invasion is far from clear. Because the Amendment's protections extend only to searches and seizures, heartbeat detection need only satisfy the reasonableness test if it falls within the definition of either of these governmental activities.<sup>181</sup> This issue, in turn, is affected by which definition of a search the Court may choose to adopt in its assessment of ESDS technology.

---

<sup>179</sup> *Chandler v. Miller*, 117 S. Ct. 1295, 1296 (1997).

<sup>180</sup> Justice Ginsburg recognized special needs as an exception to Fourth Amendment fundamentals, noting "When such 'special needs'—concerns other than crime detection—are alleged in justification of a Fourth Amendment intrusion, courts *must* undertake a context-specific inquiry, examining closely the competing private and public interests advanced by the parties." *Id.* at 1301 (emphasis added). Moreover, when the special needs doctrine was challenged as infringing on state sovereignty, the Court adamantly rejected the attack by asserting, "Our guides remain *Skinner*, *Von Raab*, and *Vernonia*." *Id.* at 1303. For further exploration of *Chandler*'s special needs analysis, see George M. Dery III, *Are Politicians More Deserving of Privacy than Schoolchildren? How Chandler v. Miller Exposed the Absurdities of Fourth Amendment "Special Needs" Balancing*, 40 ARIZ. L. REV. 73 (1998).

<sup>181</sup> This Article is limited to an analysis of the heartbeat detector within the Fourth Amendment context. It, therefore, does not consider the Fourteenth Amendment Due Process implications of the use of this device. Further, as previously stated, this Article focuses on the issue of an ESDS *search* rather than an ESDS *seizure*. See *supra* note 68 and accompanying text.

1. Heartbeat Detection Appears to Constitute a Fourth Amendment Search Under *Katz*'s "Reasonable Expectation of Privacy" Standard

At first blush, the privacy expectation a reasonable person holds in his or her own heart seems to be beyond question. Certainly if a patdown of a pocket involves a "severe . . . intrusion upon cherished personal security,"<sup>182</sup> and rummaging through a closed purse is a "substantial invasion of privacy,"<sup>183</sup> probing the heart must constitute a Fourth Amendment search. The Supreme Court has confirmed this logic by finding that the recovery of blood coursing to the heart "plainly involves the broadly conceived reach of a search and seizure under the Fourth Amendment."<sup>184</sup> Indeed, the Court found this point was so obvious that no one reasonably could argue against it.<sup>185</sup>

The Court has experienced no difficulty in extending Fourth Amendment protection beyond the interior of an individual's person to that of his or her vehicle. In *Carroll v. United States*,<sup>186</sup> the seminal case in which the Court crafted the automobile exception to the warrant requirement, the Court determined that recovering sixty-eight bottles of liquor from under seat upholstery constituted a search.<sup>187</sup> Further, in *United States v. Ortiz*,<sup>188</sup> the Court found that the physical search for persons in the defendant's trunk amounted to a search.<sup>189</sup>

Yet, the reasonableness of a person's privacy expectation from heartbeat detection may not be as safely settled as these cases may indicate. If people simply become accustomed to being scanned by heartbeat detectors, then any privacy expectation, excluding the recognition of systems like ESDS, would be considered unreasonable. Such circumstances seem to have moved beyond the hypothetical: With the explicit purpose of *encouraging* "widespread application of this system," GeoVox Security, Inc. has obtained the license to market a commercial version of ESDS.<sup>190</sup> In theory, private corporations, which are not limited, as government officials are, by the Constitution, could operate a heartbeat detector at any delivery port, parking garage, theme park, or drive-in theater. The societal erosion of this privacy expectation thus would break ground for later government invasion.

---

<sup>182</sup> *Terry v. Ohio*, 392 U.S. 1, 24-25 (1968).

<sup>183</sup> *New Jersey v. T.L.O.*, 469 U.S. 325, 337 (1985).

<sup>184</sup> *Schmerber v. California*, 384 U.S. 757, 767 (1966).

<sup>185</sup> Justice Brennan, writing for the Court in *Schmerber*, noted: "It could not reasonably be argued, and indeed respondent does not argue, that the administration of the blood test in this case was free of the constraints of the Fourth Amendment." *Id.*

<sup>186</sup> 267 U.S. 132 (1925).

<sup>187</sup> *See id.* at 153.

<sup>188</sup> 422 U.S. 891 (1975).

<sup>189</sup> *See id.* at 892.

<sup>190</sup> *See* OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 1.



Further, advocates of government employment of ESDS technology need not wait for common commercial usage. One may sidestep the traditional logic of *Katz* with a simple assertion: The Court should not analyze ESDS in the vacuum of traditional reasonable expectation of privacy law. Instead, it should consider the heartbeat detector in the light of refinements made in the cases of canine sniffs and police overflights.

## 2. Heartbeat Detection Will Not Constitute a Fourth Amendment Search Under *Place*'s "Canine Sniff" Analysis

In deciding whether the Fourth Amendment even reaches heartbeat detectors, the Court may choose to forgo entirely the *Katz* reasonable expectation of privacy standard, in favor of its canine sniff rule. The ESDS finally may be the "investigative procedure" which causes trained dogs to no longer be *sui generis* in the surgical nature of their intrusion on privacy.<sup>191</sup> The heartbeat detector is as limited as a canine sniff both in its manner of obtaining facts and in the content of the information it reveals.<sup>192</sup> While dogs spare a traveler from an officer's rummaging through the contents of her luggage, the ESDS's seismic geophones may save a truck driver from an eight-hour physical search by as many as six people.<sup>193</sup> Moreover, dogs and heartbeat detectors share similarities in the content of the information they seek. A canine hones in on "only the presence or absence of narcotics, a contraband item,"<sup>194</sup> while ESDS discloses only the presence or absence of a hidden person, who would be present only for an illegal purpose whether at a nuclear facility, prison, border checkpoint, or airport. Heartbeat detectors provide a search method even more precise than canines, which suffer a twenty percent failure rate in detecting concealed persons.<sup>195</sup> Thus, if canine searches escape Fourth Amendment regulation due to their tailored accuracy, so should the even more limited and precise investigative procedure presented in ESDS.

## 3. Heartbeat Detection Will Not Constitute a Fourth Amendment Search Under the Recently Resurrected Physical Invasion Standard

A canine sniff has an additional aspect that the Supreme Court, at times, has found quite appealing: It does not involve any physical intrusion on a constitutionally protected area (as would an officer's actual rummaging through luggage). The Court

---

<sup>191</sup> See *United States v. Place*, 462 U.S. 696, 707 (1983).

<sup>192</sup> See *id.*

<sup>193</sup> See Kercel et al., *supra* note 1, at 4.

<sup>194</sup> *Place*, 462 U.S. at 707.

<sup>195</sup> Dogs are "about 80% reliable" in detecting hidden persons. See OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 2.

in *Place* discreetly omitted mention of this fact, perhaps because such reasoning conflicted so jarringly with *Katz*'s reasonable expectation of privacy doctrine. As previously noted, however, by the time it considered aerial surveillance in the late 1980's, the Court seemed willing to return to the tangibility of the physical invasion standard.<sup>196</sup>

Under the old physical "trespass upon a constitutionally protected area"<sup>197</sup> doctrine which the Court seems ready to disinter, ESDS could dodge completely the Fourth Amendment definition of a search. In fact, the operator may find it eerie that the heartbeat detector operates similarly to *Goldman*'s "detectaphone."<sup>198</sup> Both devices operate while flush with a surface and collect waves generated by a person on the other side of a barrier.<sup>199</sup> Because neither device creates the "physical invasion" deemed crucial by the Court in *Riley*, neither should trigger a Fourth Amendment search.<sup>200</sup>

*B. The Use of the Heartbeat Detector at Nuclear Facilities, Prisons, Border Operations, and Airports Will Be Justified as Falling Within Special Needs*

*1. The Court Previously Has Identified a "Special Need" Beyond Law Enforcement in Cases Focusing on Criminal Activity*

As recently as 1994, the Court reaffirmed its general preference that police seek warrants when investigating criminal wrongdoing.<sup>201</sup> Due to the primacy of the warrant requirement in criminal investigations, it may seem that use of ESDS typically would require prior judicial authorization. After all, the heartbeat detector is designed to alert law enforcement to the presence of criminals. People who deliberately aim to create a "criticality event" which could kill "hundreds of hostages" at nuclear weapons plants are brutal murderers.<sup>202</sup> Persons who escape

---

<sup>196</sup> See, e.g., *Florida v. Riley*, 488 U.S. 445, 449 (1989) ("[T]he home and its curtilage are not necessarily protected from inspection that involves no physical invasion.").

<sup>197</sup> *Goldman v. United States*, 316 U.S. 129, 134-35 (1942), *overruled by Katz v. United States*, 389 U.S. 347 (1967).

<sup>198</sup> See *Goldman*, 316 U.S. at 131-32.

<sup>199</sup> See *id.*; see also Strauss, *supra* note 10.

<sup>200</sup> See *Riley*, 488 U.S. at 449.

<sup>201</sup> The *Acton*, the Court noted: "Where a search is undertaken by law enforcement officials to discover evidence of criminal wrongdoing, this Court has said that reasonableness generally requires the obtaining of a judicial warrant." *Vernonia Sch. Dist. 47J v. Acton*, 515 U.S. 646, 653 (1995). Certainly, among the most incriminating evidence at a criminal trial for nuclear sabotage, prison escape, illegal immigration, or airline terrorism, is the very presence of the defendant hidden in the sensitive area. Thus, the search for the dangerous individuals in these cases is, at the same time, a search for incriminating evidence in any future criminal case.

<sup>202</sup> See OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 6.

from prison are, by definition, convicted felons. Those who attempt to circumvent the border checkpoints do so to avoid capture for violating our nation's immigration laws. The individuals who try to smuggle weapons aboard airplanes are violent terrorists.

Despite the obvious criminality of prison escapees, airline hijackers, and others within the heartbeat detector's scrutiny, the Court may not choose to characterize the dangers created by such persons as criminal in nature. This tendency is due to a curious quirk in special needs analysis. Traditionally, if a legislature perceives a particular behavior to be especially blameworthy and injurious to society, it will define the act as criminal and punish its commission as a crime. Investigations of such activity then typically trigger application of the relevant criminal rights. A warrant under the Fourth Amendment supports the right to a search. As noted, however, should the Court deem that a particular behavior creates a special kind of harm to society outside of the criminal context, the fundamentals of warrants and individualized suspicion may be balanced away in a "special needs" reasonableness analysis. This idea promotes government effectiveness, for it allows officials to act unfettered by Fourth Amendment limitations. The more dangerous the Court perceives a harm, therefore, the more tempted it may be to provide the government with the free rein inherent in special needs analysis. Such reasoning has created an ironic twist in search and seizure law: The Court, when confronted with actions possessing the most potential for peril to society, seeks to avoid the very label the peoples' representatives have reserved for the most prohibited behavior, "crime."<sup>203</sup>

Certainly, in the United States, possession and use of a controlled substance without prescription is a crime.<sup>204</sup> Dealing of such a drug to others is an even more serious offense.<sup>205</sup> New sentencing enhancements target those who sell drugs at school.<sup>206</sup> Furthermore, marijuana is listed in the grouping of drugs most susceptible

---

<sup>203</sup> Justice White would have recognized that the current Court's special needs analysis stands the Fourth Amendment on its head. As previously noted in the *Camara* discussion, Justice White argued: "It is surely anomalous to say that the individual and his private property are fully protected by the Fourth Amendment only when the individual is suspected of criminal behavior." *Camara v. United States*, 387 U.S. 523, 530 (1967). Thanks to special needs, this anomaly has become reality.

<sup>204</sup> For example, California's Health and Safety Code § 11350(a) provides in part: "Except as otherwise provided in this division, every person who possesses . . . any controlled substance . . . unless upon the written prescription of a physician . . . shall be punished by imprisonment in the state prison." CAL. HEALTH & SAFETY CODE § 11350(a) (West 1998).

<sup>205</sup> California's Health and Safety Code § 11352(a) provides in part: "Except as otherwise provided in this division, every person who transports, imports into this state, sells . . . any controlled substances . . . shall be punished by imprisonment in the state prison for three, four, or five years." CAL. HEALTH & SAFETY CODE § 11352(a) (West 1998).

<sup>206</sup> California's Health and Safety Code § 11353.6(b) provides in part:

Any person 18 years of age or over who is convicted of a violation of Section . . . 11352 . . . where the violation takes place upon the grounds of, or within

for abuse, the "Schedule I" substances.<sup>207</sup> The consideration of all of these facts together would seem to point to the conclusion that the government should treat marijuana sales at school as a crime. Mr. Theodore Choplick, the assistant vice principal of the student in *T.L.O.*, seemed to agree.<sup>208</sup> Upon discovering, in the student's purse, marijuana and papers implicating her in drug sales, Choplick turned this evidence over to police.<sup>209</sup> Certainly, these illicit drugs and the incriminating letters constituted key evidence in any criminal case pursued against her. The police agreed with Mr. Choplick's view of the matter and took the case to juvenile court.<sup>210</sup> The Supreme Court, however, took a different tack, citing the government's interest in "maintaining security and order in the schools."<sup>211</sup> By framing the case as one involving a "need to maintain an environment in which learning can take place," rather than involving a typical crime, the Court freed itself from the traditional warrant requirement and enabled itself to perform special needs balancing.<sup>212</sup> In a case involving drugs, which in some locales, have been calculated to account for

---

1,000 feet of, a public or private elementary, vocational, junior high, or high school during hours that the school is open for classes . . . shall receive an additional punishment of 3, 4, or 5 years at the court's discretion.

CAL. HEALTH & SAFETY CODE § 11353.6(b) (West 1998).

<sup>207</sup> Section 812 in Title 21 of the United States Code provides in part:

There are established five schedules of controlled substances, to be known as schedules I, II, III, IV, and V. . . .

(b)(1) Schedule I.—

(A) The drug or other substance has a high potential for abuse.

(B) The drug or other substance has no currently accepted medical use in treatment in the United States.

(C) There is a lack of accepted safety for use of the drug or other substance under medical supervision.

Schedule I . . . (c) Unless specifically excepted or unless listed in another schedule . . .

(10) Marihuana.

21 U.S.C. § 812 (1998).

<sup>208</sup> See *New Jersey v. T.L.O.*, 469 U.S. 325, 330 (1985). The student and Mr. Choplick, presumably residing in New Jersey, would be beyond the reach of the statutes. See *supra* text accompanying notes 168-71. However, federal and state laws all are modeled upon the Uniform Controlled Substances Act, 21 U.S.C. § 812 (1994).

<sup>209</sup> See *T.L.O.*, 469 U.S. at 328.

<sup>210</sup> See *id.* at 329.

<sup>211</sup> *Id.* at 340.

<sup>212</sup> See *id.*

some fifty percent of arrests,<sup>213</sup> the Court still was able to avoid the Fourth Amendment fundamentals by pursuing a "special need."<sup>214</sup>

Similar selective labeling occurred in *Skinner v. Railway Labor Executives' Ass'n*, a case upholding suspicionless drug urinalysis of railroad employees.<sup>215</sup> The drug tests at issue in *Skinner* were meant to determine if various employees were operating the railroads while under the influence of alcohol or drugs.<sup>216</sup> Of course, the actions of being under the influence of a controlled substance, driving while impaired by alcohol or drugs, and causing either injury or death while driving under the influence, readily fall within the definitions of criminal offenses.<sup>217</sup> Further, the "[e]xtraction of blood samples for testing is a highly effective means of determining the degree to which a person is under the influence"<sup>218</sup> and, therefore, the gathering of bodily fluids in *Skinner* resulted in access to highly probative evidence for any subsequent criminal proceeding. Despite the criminal nature of the actions being investigated and the evidence obtained by the tests, the Court characterized the case as one merely involving the regulation of "conduct of railroad employees to ensure safety."<sup>219</sup> Locating "'special needs' beyond normal law enforcement" provided the justification to forgo meeting "the usual warrant and probable-cause requirements."<sup>220</sup>

Perhaps the most glaring demonstration of the Court's avoidance of the "criminal investigation" label occurred in *National Treasury Employees Union v. Von Raab*.<sup>221</sup> Customs agents were required to submit to drug urinalysis to gain certain promotions.<sup>222</sup> Justice Kennedy, writing for the *Von Raab* majority, determined that such testing prevented customs officials from being "the targets of bribery,"<sup>223</sup> from becoming actively complicit in the "importation of sizable drug shipments,"<sup>224</sup> or from blocking the "apprehension of dangerous criminals."<sup>225</sup> Also of concern was

---

<sup>213</sup> One commentator has noted: "In many cities, half or more of the arrests are for drugs or other crimes related to drug trafficking." Steven B. Duke, *Drug Prohibition: An Unnatural Disaster*, 27 CONN. L. REV. 571, 579 (1995).

<sup>214</sup> See *T.L.O.*, 469 U.S. at 351.

<sup>215</sup> 489 U.S. 602 (1989).

<sup>216</sup> See *id.* at 608-09.

<sup>217</sup> See generally CAL. HEALTH & SAFETY CODE § 11550 (West 1998) (Under the Influence of a Controlled Substance); CAL. VEH. CODE § 23152 (West 1998) (Driving Under the Influence of Alcohol or Drugs); CAL. PENAL CODE § 191.5 (West 1998) (Gross Vehicular Manslaughter While Intoxicated).

<sup>218</sup> *Schmerber v. California*, 384 U.S. 757, 771 (1966).

<sup>219</sup> *Skinner v. Railway Labor Exec. Ass'n*, 489 U.S. at 620.

<sup>220</sup> *Id.*

<sup>221</sup> 489 U.S. 656 (1988).

<sup>222</sup> See *id.* at 660-61.

<sup>223</sup> *Id.* at 669.

<sup>224</sup> *Id.* at 670.

<sup>225</sup> *Id.*

the effect drugs would have on officials who “may need to employ deadly force.”<sup>226</sup> *Von Raab* therefore characterized the testing program as “not designed to serve the ordinary needs of law enforcement.”<sup>227</sup> This conclusion enabled the Court to subject the Customs testing program to the balancing analysis.<sup>228</sup> It is curious that the Court would view bribery, drug importation, obstruction of justice, and improper discharge of a firearm as implicating uniquely non-criminal concerns.

C. *The Court Easily May Identify the Movement of Criminals Through Nuclear Facilities, Prisons, Borders, and Airports as Threatening Societal Interests Beyond Those of Law Enforcement*

1. *Illegal Entry into Nuclear Facilities Implicates Special Needs*

Common sense decrees that if the government has a special need regarding any activity, it is for the security of nuclear facilities. The DOE initially pursued ESDS specifically for protecting government weapons plants against terrorists bent on killing “hundreds of hostages,” and electric utilities from eco-terrorists aiming to contaminate the environment.<sup>229</sup> Moreover, these interests may be said to be global. Loss of control at a nuclear facility conceivably could undermine the non-proliferation treaty or even ultimately trigger a nuclear exchange between nations. The Court itself has recognized the magnitude of societal interest implicated by nuclear facilities. In *Skinner*, the Court illustrated the compelling nature of the government’s need in rail safety by likening it to operations of nuclear plants:

Employees subject to the [urine] tests discharge duties fraught with such risks of injury to others that even a momentary lapse of attention can have disastrous consequences. Much like persons who have routine access to dangerous nuclear power facilities . . . employees who are subject to testing under the FRA (Federal Railway Administration) regulations can cause great human loss.<sup>230</sup>

Just as a “momentary lapse” of attention to daily operations can spell disaster at a nuclear plant, so too could a momentary lapse in the facility’s security. At a nuclear plant, failing to detect one person during a physical search of a truck could endanger a community, the nation, or the globe.

---

<sup>226</sup> *Id.* at 671.

<sup>227</sup> *Id.* at 679.

<sup>228</sup> *See id.*

<sup>229</sup> *See* OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 6.

<sup>230</sup> *Skinner*, 489 U.S. at 628.

The lower courts, which have addressed directly the perils of nuclear power, clearly recognized the unique stakes involved in the protection of these facilities. Judge Arnold, writing for the Circuit in *Rushton v. Nebraska Public Power District*,<sup>231</sup> described the nuclear plant's security measures in great detail:

The NRC (Nuclear Regulatory Commission) maintains resident inspectors at CNS (Cooper Nuclear Station) and periodically sends teams to review the plant's security. Access to the plant is restricted. The protected area of the plant is completely surrounded by a fence. To enter the protected area, a person must go through explosive and metal detectors, and submit to random pat downs by guards. Identification must be presented to the guards, and a badge issued.<sup>232</sup>

The majority in *Rushton* then went on to uphold yet another security measure: "preemployment, pretransfer, annual, and for-cause [urinalysis] testing" of plant employees as part of a "Fitness for Duty Program."<sup>233</sup> The majority reached this conclusion by heeding the Court's call in *T.L.O.* to consider the *context* of the government intrusion.<sup>234</sup> The situation presented in *Rushton* was the peril of a nuclear disaster. Judge Arnold noted: "The potential for harm is vast" while the intrusion on the employees has been limited by their choice to work in an industry that is "heavily regulated."<sup>235</sup> The balance of facts thus weighed in the government's favor because societal interests assumed biblical proportions while the employees themselves had "significantly diminished" their own privacy expectations "by virtue of working at CNS."<sup>236</sup> Therefore, the case fell "squarely within the administrative-search exception," allowing suspicionless government testing.<sup>237</sup>

*Rushton*'s reasoning echoed in another case involving drug testing at a nuclear facility, *Alverado v. Washington Public Power Supply*.<sup>238</sup> "[B]ecause of the sensitive nature of the work," potential employees were "subject to security screening, background investigation and psychological evaluation."<sup>239</sup> Writing for the court in *Alverado*, Judge Utter determined that this regulatory scheme, along with nuclear

---

<sup>231</sup> 844 F.2d 562 (8th Cir. 1988).

<sup>232</sup> *See id.* at 563.

<sup>233</sup> *Id.* at 564, 567.

<sup>234</sup> The *Rushton* case cited the Court in *T.L.O.* for the assertion that: "Determination of the reasonableness of a search depends on the context in which a search takes place, and requires a balancing of the individual's legitimate expectation of privacy and personal security against the government's need for the search." *Id.* at 566.

<sup>235</sup> *Id.*

<sup>236</sup> *Id.*

<sup>237</sup> *Id.* at 566, 567.

<sup>238</sup> 759 P.2d 427 (1988).

<sup>239</sup> *Id.* at 428.

power's potential for catastrophic consequences, placed the testing under the "pervasively regulated industry" label.<sup>240</sup> This finding then opened the way to a balancing of the competing concerns.<sup>241</sup>

In weighing the interests of society against those of the individual in this pervasively regulated industry, the court in *Alverado* found any individualized suspicion requirement to be unworkable:

Because of the government's overriding interest in preventing any drug-impaired employee from working in one of these vital areas, and the difficulty in determining by mere visual observation whether a prospective employee suffers from such impairment, routine drug testing in the context of preemployment screening is virtually the only way in which the operators of the WPPSS [nuclear] facility can effectively monitor compliance.<sup>242</sup>

While individualized suspicion was impractical, a warrant was simply unnecessary because the drug testing program itself possessed "constitutionally adequate substitutes."<sup>243</sup> For instance, test subjects were given advanced warning, allowed to provide a "nonwitnessed" urine sample in a medical setting, and guaranteed confidentiality.<sup>244</sup> Such precautions enabled the program designers to dispense with the traditional Fourth Amendment safeguards.

This precedent seems to open the door to the implementation of ESDS at nuclear facilities. If persons working in nuclear facilities already can be subjected to psychological tests, explosive and metal detectors, random patdowns, and suspicionless urine tests, certainly those who drive vehicles in and out of such plants can suffer the smaller intrusion of having their trucks scanned for hidden heartbeats. The balance of interests may be even more favorable to the government than in the case of employee urinalysis. Certainly, the government's need is larger in the circumstances in which ESDS would be used; terrorists intent on destroying life arguably pose more danger than do impaired employees. As for ESDS's intrusion on the individual, most people probably would opt to have the waves from within their vehicles, or even from their hearts, measured rather than being required to void into a cup. If individualized suspicion is not constitutionally mandated for the less necessary and more invasive drug test, it should not be required for the heartbeat detector. Regarding the warrant requirement, the heartbeat detector could provide an adequate substitute for a warrant simply by the posting of warning signs and by

---

<sup>240</sup> *Id.* at 433.

<sup>241</sup> *See id.* at 433.

<sup>242</sup> *Id.* at 436.

<sup>243</sup> *Id.*

<sup>244</sup> *See id.*



limiting ESDS use to the vehicles that attempt to enter or exit the plant. *Alverado's* other safeguards, the nonwitnessed sampling, medical setting, and confidentiality, target intrusions unique to urine testing and, therefore, are inapplicable to ESDS.

## 2. Escapes From Prison Implicate Special Needs

Escaping from prison is a criminal offense independent of that for which an inmate is already serving time.<sup>245</sup> When authorities search with spotlights or dogs, alert the community that an escapee is at large, or check the homes of an escapee's family or friends, however, their primary goal is arguably the recovery of the escapee. If officials desire to conduct an investigation to collect evidence of the escape, the best evidence probably will be back at the institution itself. In fact, the most obvious evidence of escape is the very absence of the prisoner from the facility. One may argue, therefore, that when a convict is at large, the government uses resources to promote a special need beyond that of law enforcement, the safety of the surrounding populace from a potentially desperate and dangerous individual.<sup>246</sup> Even more importantly for the purposes of ESDS, the heartbeat detector would be used to *prevent* escape and the resulting peril to the community in the first place.<sup>247</sup> In this sense, ESDS is more analogous to guards posted at the perimeter, cameras, lights, or even the prison's walls than it is to bloodhounds tracking down a fugitive.

Clearly, in a situation in which officials intend to maintain the status quo of keeping inmates in prison, probable cause or any individualized suspicion requirement of a prisoner who already has escaped—or a warrant with information supporting such a requirement—would be unworkable. With prisons, like airports, the people who will be intruded upon (the drivers of support vehicles) will be the

---

<sup>245</sup> See Section 751 in Title 18 of the United States Code which provides in part: Whoever escapes or attempts to escape from the custody of the Attorney General or his authorized representative, or from any institution or facility in which he is confined by direction of the Attorney General, or from any custody under or by virtue of any process issued under the laws of the United States by any court, judge, or commissioner, or from the custody of an officer or employee of the United States pursuant to lawful arrest, shall, if the custody or confinement is by virtue of an arrest on a charge of felony, or conviction of any offense, be fined under this title or imprisoned not more than five years, or both.

18 U.S.C. § 751 (1994).

<sup>246</sup> Moreover, the considerable resources needed to capture an escapee create special needs of their own. The typical monetary cost for each prison escape has been estimated at \$100,000. *See* OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 5. "Some prison authorities place the estimated cost at nearer \$250K." *Id.* The aggregate cost of escapes by prisoners hiding in outgoing support vehicles, when it is estimated that "an average of one successful escape per year per prison uses this ploy," must be enormous. *Id.*

<sup>247</sup> *See id.*

“immediate beneficiaries of the screening system [because] security precautions increase the likelihood of safe arrival at their chosen destination.”<sup>248</sup>

### 3. Smuggling Undocumented Aliens Implicates Special Needs

Supreme Court precedent has established firmly the special needs the government possesses in checking illegal immigration at interior checkpoints. The majority of the Court in *United States v. Martinez-Fuerte* offered this summary:

Our previous cases have recognized that maintenance of a traffic-checking program in the interior is necessary because the flow of illegal aliens cannot be controlled effectively at the border. We note here only the substantiality of the public interest in the practice of routine stops for inquiry at permanent checkpoints, a practice which the Government identifies as the most important of the traffic-checking operations. These checkpoints are located on important highways; in their absence such highways would offer illegal aliens a quick and safe route into the interior. Routine checkpoint inquiries apprehend many smugglers and illegal aliens who succumb to the lure of such highways. And the prospect of such inquiries forces others onto less efficient roads that are less heavily traveled, slowing their movement and making them more vulnerable to detection by roving patrols.<sup>249</sup>

The Court thus identified permanent immigration checkpoints as creating a “particular context” in which the Court should “weigh[] the public interest against the Fourth Amendment interest of the individual.”<sup>250</sup> Again, special needs balancing freed the Court to focus on the *practicality* of maintaining Fourth Amendment fundamentals.<sup>251</sup> In this weighing process, the Court found the government interest in making routine checkpoint stops to be great, while it viewed the resulting intrusion on the individual as quite limited. The intrusion involved “only a brief detention” of motorists, during which “[a]ll that is required of the vehicle’s occupants is a

---

<sup>248</sup> *People v. Hyde*, 524 P.2d 830, 835 (1974).

<sup>249</sup> *United States v. Martinez-Fuerte*, 428 U.S. 543, 556-57 (1976).

<sup>250</sup> *Id.* at 555.

<sup>251</sup> The Court asserted:

A requirement that stops on major routes inland always be based on reasonable suspicion would be impractical because the flow of traffic tends to be too heavy to allow the particularized study of a given car that would enable it to be identified as a possible carrier of illegal aliens. In particular, such a requirement would largely eliminate any deterrent to the conduct of well-disguised smuggling operations, even though smugglers are known to use these highways regularly.

*Id.* at 557.

response to a brief question or two and possibly the production of a document evidencing a right to be in the United States.”<sup>252</sup> Writing for the majority, Justice Powell considered government checkpoint activity so limited that he even deemed the “objective intrusion” occasioned by the selective referrals of certain drivers to a “secondary inspection area” as only “minimal.”<sup>253</sup> The balancing of interests required by the holding in *Martinez-Fuerte* reduced the official action at issue to nothing more than “the stop itself, the questioning, and the visual inspection.”<sup>254</sup>

The Court felt little was needed to justify such a small annoyance. Even the lowest standard of justification, “reasonable suspicion,” was deemed “impractical.”<sup>255</sup> In response to the defendants’ plea that at least “some quantum of individualized suspicion is usually a prerequisite to a constitutional search or seizure,”<sup>256</sup> Justice Powell intoned, “[T]he Fourth Amendment imposes no irreducible requirement of such suspicion.”<sup>257</sup> Without a requirement of individualized suspicion, a warrant establishing facts supporting it would be an empty act. Thus, it logically was inevitable that the Court would go on to decide that “a warrant requirement here would make little contribution.”<sup>258</sup> Justice Powell bolstered his abandonment of the warrant mandate by arguing “that the visible manifestations of the field officers’ authority at a checkpoint provide substantially the same assurances in this case.”<sup>259</sup>

In light of *Martinez-Fuerte*, use of the heartbeat detector at checkpoints should receive relatively easy acceptance by the Court. ESDS would create no additional unconstitutional invasion on a vehicle’s occupants than would the typical checkpoint inquiry stop. In both situations, motorists would be detained and briefly questioned at a secondary inspection area.

The heartbeat detector would necessitate the additional intrusion of ordering the known occupants to exit the vehicle during the administration of the heartbeat test. Recent case law has indicated, however, that such official activity is reasonable. In *Pennsylvania v. Mimms*, the Court determined that the “incremental intrusion resulting from the request [to the driver] to get out of the car once the vehicle was lawfully stopped” required no additional justification.<sup>260</sup> Further, the Court expanded an officer’s order-out authority with its holding in *Maryland v. Wilson* that “an officer making a traffic stop may order passengers to get out of the car pending completion of the stop.”<sup>261</sup> Like motorists stopped for traffic tickets, drivers detained

---

<sup>252</sup> *Id.* at 558 (quoting *United States v. Brignoni-Ponce*, 422 U.S. 873, 880 (1975)).

<sup>253</sup> *Martinez-Fuerte*, 428 U.S. at 560.

<sup>254</sup> *Id.* at 558.

<sup>255</sup> *Id.* at 557.

<sup>256</sup> *Id.* at 560.

<sup>257</sup> *Id.* at 561.

<sup>258</sup> *Id.* at 565.

<sup>259</sup> *Id.*

<sup>260</sup> *Pennsylvania v. Mimms*, 434 U.S. 106, 109 (1977).

<sup>261</sup> *Maryland v. Wilson*, 519 U.S. 408, 415 (1997).

at checkpoints are seized legally by the government. Again, like the ticketed motorist, for people stopped at checkpoints, "[t]he only change in their circumstances which will result from ordering them out of the car is that they will be outside of, rather than inside of, the stopped car."<sup>262</sup> Further, pairing officers in teams of two could minimize any inconvenience stemming from the actual testing procedure. One officer could ask the occupants out of the vehicle and perform the traditional brief inquiry and document review, while the other officer places the heartbeat detector on the hood of the car. Because the actual test could be completed in "less than two minutes," locating hidden heartbeats conceivably could be accomplished before completion of the standard inquiry of the known occupants.<sup>263</sup>

One wrench can be thrown into the works of this smoothly functioning analysis. The holding of *Martinez-Fuerte* involved only stops and questions, not searches. The majority made a clear distinction between the limited "type of stops described in this opinion" and the more intrusive official action of a search of an automobile, which could be justified only by "consent or probable cause."<sup>264</sup> The Court's characterization of ESDS again becomes pivotal; should the Court apply the reasonable expectation of privacy analysis from *Katz* in a straightforward manner, heartbeat detection should constitute a search. If the Court analogizes ESDS with the canine sniff, or if it determines the lack of physical invasion to be a decisive factor as it did in *Riley*, however, then the Fourth Amendment would not even reach the government's collection of heartbeat waves.

#### 4. Airplane Safety Implicates Special Needs

The special needs that society possesses in air travel tragically are evident whenever an accident that causes injury or loss of life occurs. For decades, in an effort to address the threat to air safety presented by hijackers, technicians have installed magnetometers in airports to scan each passenger for the presence of metallic weapons. It has long been established that this procedure constitutes a search under the Fourth Amendment. For instance, the California Supreme Court, in *People v. Hyde*, opined: "The magnetometer, though minimally intrusive, unquestionably operates to search individuals within the meaning of the Fourth Amendment: the machine reveals the presence of metal objects in areas under personal control as to which the individual maintains a reasonable expectation of privacy and freedom from governmental inspection."<sup>265</sup>

The majority of the court in *Hyde*, however, considered such a search to fall within *Camara*'s "administrative search" exception to traditional Fourth Amendment

---

<sup>262</sup> *Id.*

<sup>263</sup> See OAK RIDGE NATIONAL LABORATORY, *supra* note 5, at 5.

<sup>264</sup> *Martinez-Fuerte*, 428 U.S. at 567.

<sup>265</sup> *People v. Hyde*, 524 P.2d 830, 833 (1974).

analysis.<sup>266</sup> The court noted that “the essential purpose of the anti-hijacking system established by the FAA (Federal Aviation Administration) is not to ferret out contraband or to preserve for trial evidence of criminal activity.”<sup>267</sup> Instead, the magnetometer screening was a “central phase of a comprehensive regulatory program designed to insure that dangerous weapons will not be carried onto an airplane and to deter potential hijackers from attempting to board.”<sup>268</sup>

Because the airport magnetometer was not being used for traditional criminal investigations, the reasonableness of its use was to be determined by balancing the competing interests.<sup>269</sup> The majority viewed the government’s interests in hijacking prevention as “substantial”:

Air piracy offers a unique opportunity for the political terrorist, the extortionist, or the mentally disturbed to command attention by placing in jeopardy the lives of passengers and crew, as well as private property worth millions of dollars. Hijackings constitute a significant threat to the orderly operation of air commerce and to the stability of international relations.<sup>270</sup>

In contrast to the “gravity” of the governmental concern, the passenger’s interest in avoiding the magnetometer is minimal. Indeed, most passengers would “welcome routine inspection” for they are the “immediate beneficiaries of the screening system; security precautions increase the likelihood of safe arrival at their chosen destination.”<sup>271</sup>

Special needs balancing deemed the traditional Fourth Amendment safeguard of individualized suspicion unsuited in the airport context for, like the “area inspections” in *Camara*, “it is doubtful that any other canvassing technique would achieve acceptable results.”<sup>272</sup> Similarly, the warrant procedure was a bad fit for the magnetometer because: “Every day through airport terminals, nationwide pass thousands of airline travellers, each of whom must be screened for weapons or explosives. The result is a form of ongoing emergency rendering it impracticable, if not impossible, for airline officials to seek a search warrant for individual passengers.”<sup>273</sup>

---

<sup>266</sup> See *id.* at 834-35.

<sup>267</sup> *Id.* at 834.

<sup>268</sup> *Id.*

<sup>269</sup> See *id.* at 835.

<sup>270</sup> *Id.*

<sup>271</sup> *Id.*

<sup>272</sup> *Id.* at 835-36.

<sup>273</sup> *Id.* at 836. The majority predicted that any warrant requirement for airport screenings would create “unacceptable delays” in boarding, or “pro forma warrant[s].” *Id.* at 837.

If the use of magnetometers on thousands of innocent passengers is constitutionally reasonable, then the use of ESDS on hundreds of support vehicles also must satisfy the Fourth Amendment. After all, the danger of a terrorist entering an aircraft from the back door used by supply vehicles is just as great as that posed by a terrorist coming through the front door with passengers. Further, the impact of ESDS and magnetometers on individual interests can be equated roughly. One may argue that neither technology is focused on gathering evidence of criminal activity. Instead, both are meant to screen quickly all who pass through for particular prohibited items: metal weapons or the hearts of hidden terrorists. In fact, those subjected to each technology would probably embrace it: Airline passengers and support crews probably would be happy to avoid being in the presence of terrorists.

Both the magnetometer and the heartbeat detector must operate on the "area inspection" principle; to work effectively, all must be scanned. The same arguments advanced by the court in *Hyde* in allowing the magnetometer to search without any individualized suspicion or warrant must be equally valid for ESDS at airports. Just as a requirement mandating the formation of individualized suspicion that one individual is hiding a gun under his jacket would undermine the effectiveness of the magnetometer's ability to identify or deter dangerous persons, so too would a requirement that ESDS be premised on individualized suspicion that a particular vehicle held a hidden individual. Likewise, if a warrant would cause either unacceptable delays or the generation of "pro forma" documents in the screening of passengers, it would cause the same problems with the screening of support vehicles.<sup>274</sup>

#### V. THE USE OF THE HEARTBEAT DETECTOR IMPLICATES ISSUES USUALLY RESERVED FOR SEVERE BODILY INTRUSIONS

ESDS is a technological marvel. It promotes the interests of both society and the individual by enabling the government to protect sensitive sites with a tool that operates with unsurpassed accuracy and brevity. However, all the wonders of this new technology cannot erase one crucial fact; this device intrudes beyond the interior of vehicles and into our hearts. The heartbeat detector obtains information from deep within our bodies and measures a function that is beyond our volitional control. Due to the very purpose of the heart, we cannot avoid detection by choosing to stop the beating of this organ.

The Court previously has had to confront the Fourth Amendment implications of a severe bodily intrusion, albeit not one which invaded all the way to the heart. In *Winston v. Lee*,<sup>275</sup> the Court considered the reasonableness of a government request to perform surgery, against a defendant's will, in order to recover a bullet

---

<sup>274</sup> See *id.* at 837.

<sup>275</sup> 470 U.S. 753 (1985).

lodged somewhere in the left chest area.<sup>276</sup> Rudolph Lee had received the bullet wound during his attempt to rob an armed shopkeeper.<sup>277</sup> The government moved the courts to allow it to have Lee placed under general anesthesia to remove surgically the bullet for ballistics examination.<sup>278</sup> Justice Brennan, who wrote the Court's opinion, began his analysis by noting that the Fourth Amendment generally protects the individual from "official intrusions up to the point where the community's need for evidence surmounts a specified standard, ordinarily 'probable cause.'"<sup>279</sup> Once this factual threshold is reached, it ordinarily is reasonable "to demand that the individual give up some part of his interest in privacy and security to advance the community's vital interests in law enforcement."<sup>280</sup>

Justice Brennan found the "compelled surgical intrusion" to be an invasion of a different order though, because it implicated "expectations of privacy and security of such magnitude that the intrusion may be 'unreasonable' even if likely to produce evidence of a crime."<sup>281</sup> The surgical intrusion in *Winston v. Lee* differed in several particulars from that involved with the heartbeat detector. The invasion of Lee would have involved the forced drugging of a citizen, and could have necessitated "extensive probing and retracting of the muscle tissue" carrying with it "the concomitant risks of injury to the muscle as well as injury to the nerves, blood vessels and other tissue in the chest and pleural cavity."<sup>282</sup> In contrast, the use of ESDS, relying on the passive collection of seismic waves, would involve no such drugging, cutting, or injury.

The Court in *Winston v. Lee* identified an individual interest in the bodily intrusion context that has particular relevance in the analysis of ESDS: the "dignity" of the individual.<sup>283</sup> Indeed, the invasion of a citizen's body was of vital importance to the Court's analysis: "Because we are dealing with intrusions into the human body rather than with state interferences with property relationships or private papers—'houses, papers, and effects'—we write on a clean slate."<sup>284</sup> Government intrusion into a person's own body triggers the "most personal and deep-rooted expectations of privacy" requiring a "discerning" case-by-case inquiry.<sup>285</sup> Thus, in bodily intrusion cases, in which the individual possesses a "significantly heightened privacy interest," the government must provide "a more substantial justification" to

---

<sup>276</sup> See *id.* at 755-56.

<sup>277</sup> See *id.*

<sup>278</sup> See *id.* at 755, 765.

<sup>279</sup> *Id.* at 759.

<sup>280</sup> *Id.*

<sup>281</sup> *Id.*

<sup>282</sup> *Id.* at 764.

<sup>283</sup> Justice Brennan noted: "The overriding function of the Fourth Amendment is to protect personal privacy and dignity against unwarranted intrusion by the State." *Id.* at 760.

<sup>284</sup> *Id.* (quoting *Schmerber v. California*, 384 U.S. 757, 767-68 (1966)).

<sup>285</sup> *Id.* at 760.

prove the search reasonable.<sup>286</sup> Far from the special needs case law allowing certain suspicionless intrusions upon the individual, therefore, the *Winston v. Lee* holding would mandate a level of justification even higher than traditional probable cause when probing the human heart. Any special needs analysis omitting consideration of ESDS's uniquely powerful ability to probe hearts could cause the Court to stray far from the protections it deliberately established for cases involving government intrusions into the body.

## VI. CONCLUSION

In Edgar Allan Poe's short story, "The Tell-Tale Heart," a killer imagined police could hear the heartbeat of his victim who was hidden beneath their feet.<sup>287</sup> Of course, the clue that led police to the body was the narrator's own guilt, rather than any sound from a heart that had ceased to beat.<sup>288</sup> One and a half centuries later, technology has crafted a curious mirror image of Poe's theme. Whether average citizens today are aware, ESDS enables police to sense our beating hearts simply by attaching an inexpensive device to the outer surfaces of our vehicles.

This advance in technology, like the advances before it,<sup>289</sup> may force the Court to reassess its various definitions of a Fourth Amendment search. The Court in *Katz*

---

<sup>286</sup> *Id.* at 767.

<sup>287</sup> Edgar Allan Poe, "The Tell-Tale Heart," in *TALES OF MYSTERY & IMAGINATION* 255 (1966). Poe wrote:

The ringing became more distinct:—it continued and became more distinct . . . it continued and gained definitiveness—until, at length, I found that the noise was *not* within my ears.

No doubt I now grew *very* pale;—but I talked more fluently, and with a heightened voice. Yet the sound increased—and what could I do? It was a *low dull, quick sound—much such a sound as a watch makes when enveloped in cotton* . . . . Oh God! what *could* I do? I foamed—I raved—I swore! I swung the chair upon which I had been sitting, and grated it upon the boards, but the noise arose over all and continually increased . . . . And still the men chatted pleasantly, and smiled. Was it possible they heard not? Almighty God!—no, no! They heard!—they suspected!—they *knew*!—they were making a mockery of my horror!

*Id.* at 259. Others have noted the connection to Poe. See *The Tell-Tale Heart: Detector Picks Up Heartbeat of Hidden Humans*, *supra* note 3.

<sup>288</sup> "'Villains!' I shrieked, 'dissemble no more! I admit the deed!—tear up the planks!—here, here!—it is the beating of his hideous heart!'" Poe, *supra* note 287.

<sup>289</sup> For examples of the Court's consideration of the scope of a Fourth Amendment search in light of new technology, see *Dow Chemical Co. v. United States*, 476 U.S. 227 (1986) (high precision aerial photography); *Smith v. Maryland*, 442 U.S. 735 (1978) (pen registers); *Goldman v. United States*, 316 U.S. 129 (1941) (bugging); and *Olmstead v. United States*, 277 U.S. 438 (1927) (wiretapping).



declared that "the Fourth Amendment protects people, not places."<sup>290</sup> To give meaning to this mandate, the Court must shield *Katz*'s "reasonable expectation of privacy" search definition from the continually corrosive forces of technological developments and intrusions by commercial concerns. Perhaps the Court should consider distinguishing between privacy intrusions by government actors and those in the private or commercial sphere. Simply because a business concern such as GeoVox Security, Inc. makes a particular intrusion common does not mean that the government simply may follow suit without even triggering Fourth Amendment application. Inspection of an individual by a corporation (however unsettling a prospect this may be) does not equate with a probe by the government which possesses the resources of the state to prosecute and punish. Moreover, the Court itself must apply *Katz*'s formula consistently to every case. The justices should not be tempted to apply a less demanding standard when faced with a surgically precise investigation technique<sup>291</sup> or an observation made without physical penetration of premises.<sup>292</sup>

Further, the Court must place meaningful limits on its special needs precedent. This case law has wandered dangerously far from its origins. The first decisions attempted to remain faithful to at least some of the Fourth Amendment fundamentals; the Court in *Camara* recognized that criminal consequences may exist even in administrative matters and, therefore, demanded government intrusions be cleared previously by neutral magistrates.<sup>293</sup> The *T.L.O.* majority viewed a school administrator's foray into a student's purse as a "severe violation of subjective expectations of privacy" and thus premised the official conduct on individualized suspicion.<sup>294</sup> Justice White, the author of both the *Camara* and *T.L.O.* opinions would be hard pressed to recognize the special needs doctrine in later case law such as that in *Acton*.<sup>295</sup> By the time the Court considered urinalysis testing of students, it had become familiar with abandoning both the warrant and individualized suspicion requirements.

A return, at least to the half-measures taken in *Camara*, would not only be desirable but quite feasible. If the government is able to establish reasonableness for an issuing judge for the ever-roving housing inspectors, certainly it could establish the reasonableness of government intrusions at the fixed locations of nuclear facilities, prisons, border checkpoints, and airports for a magistrate. Judicial pre-approval could ensure clear guidelines for government heartbeat detentions and advise drivers of the need for the invasions.

---

<sup>290</sup> *Katz v. United States*, 389 U.S. 347, 351 (1967).

<sup>291</sup> *See United States v. Place*, 462 U.S. 696, 707 (1982).

<sup>292</sup> *See Florida v. Riley*, 488 U.S. 445, 445 (1989).

<sup>293</sup> *See Camara v. Municipal Court*, 387 U.S. 523, 531, 534 (1967).

<sup>294</sup> *See New Jersey v. T.L.O.*, 469 U.S. 325, 338 (1985).

<sup>295</sup> *See Vernonia Sch. Dist. 47J v. Acton*, 515 U.S. 646 (1995).

The alternative to a reassertion of Fourth Amendment fundamentals in analyzing heartbeat detection would be protection against unreasonable searches in name only. The current Court, by trimming continually the Amendment's scope, and by measuring creatively the competing interests in special needs cases, has established areas of government behavior which are virtually immune to constitutional constraint. Should the Court fail to shore up Fourth Amendment requirements, its answer to anyone seeking protection from government invasions of the deepest regions of their bodies simply may be: "If you wish to avoid detection, then stop your heart from beating."