

Steven Chen

Dr. Douglas Brutlag

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Lurking in the Shadows: A Case Study of Surreptitious Sampling

Introduction

The Fourth Amendment requires the possession of a warrant before search and seizure and is commonly associated with a right to privacy. However, due to the September 11th attacks and heightened global conflict, the amendment and its implications have constantly come into question. The ubiquitous fear of terrorist threats allows the government to pass powerful legislation that heightens the country's internal and external defenses at the cost of individual privacy. Many would argue that these acts are justified; for example, in times of danger, we grant the president extreme wartime powers to lead our country to safety. However, at what point does invasion of privacy present an issue?

Would you be comfortable knowing that right outside your residence, police were waiting for you to relinquish possession of anything with your DNA on it – a water bottle, a cigarette stub, or even a used napkin? Law enforcement officials are currently utilizing this technique of surreptitious sampling to obtain trash for DNA sampling. Rolando Gallego experienced this firsthand as his cigarette stub was used to incriminate him for a 15 year old crime. His DNA matched the genetic profile of a towel found at the murder scene, and he was immediately

convicted (Harmon). The ethics and legality of this practice seem skeptical at best; how does one protect himself from the grasp of the police short of becoming a hermit? However, at the same time, the efficacy of surreptitious sampling is undeniable. As long as no laws are broken, this method of obtaining evidence contains few flaws and removes the difficult requirement of probable cause. In addition, the suspect remains completely unaware of the investigation, granting the police the element of surprise. It seems reasonable that surreptitious sampling could become a just and powerful weapon in the war against crime.

With some background of the relationship between privacy and surreptitious sampling, I will review recent court cases regarding the topic and analyze their decisions and subsequent arguments behind those decisions. I will then introduce ways in which DNA can be manipulated for negative, selfish reasons, specifically the worrisome rise of DNA theft occurrences. Finally, I will evaluate the accuracy of DNA testing itself, its ability to successfully incriminate suspects, and its moral implications.

Privacy: What Does It Mean?

First of all, what is privacy, why is its preservation so important, and how does surreptitious sampling affect it? Privacy, in its most general form, is defined as “a state of separateness from others” in a “bodily or psychological sense,” or by “reference to the inaccessibility to...personal information” (Laurie). Several benefits arise from a maintenance of privacy, including the ability for “relationships to begin and to grow,” reflection and learning from experiences, “a degree of mental stability,” prevention of “unauthorized invasion of the body,” protection from discrimination, and overall a more well-rounded society. Surreptitious sampling poses danger to two of these already. A reasonable degree of mental stability is difficult

to sustain knowing that the police can search any visible, abandoned object; this state of paranoia negatively contributes to mental health, possibly even conducive to insanity. In regards specifically to DNA, or “personal information,” genetic material wields the power to discriminate in the workplace. Disease susceptibility can make certain candidates liabilities for companies, especially those involve health insurance, and therefore public knowledge of DNA effectively diminishes those people’s chances to solidify a job offer. Due to the Fourth Amendment’s inherent implications of privacy, as established by several landmark Supreme Court cases (i.e. *Griswold v. Connecticut*, *Roe v. Wade*), surreptitious sampling seems to violate a constitutional right to privacy.

However, the aforementioned possibilities have been somewhat mitigated by the Genetic Information Nondiscrimination Act, which bans the use of genetic information in the decision-making of insurance eligibility or employment opportunities (Genetics Home Reference). In the same vein of thought, many argue that to protect this privacy, government must impose restrictions to keep individuality sacred (Laurie). Suddenly, government intervention proves paramount to the protection of the citizens. Without laws that inhibit criminal acts, those with evil intentions would be free to harm as they please. By this token, if the government discovered a novel technique to crackdown on criminals, shouldn’t law enforcement utilize it to the best of their ability in order to protect against “unauthorized invasion of the body?” (Laurie). Clearly, a balance between isolation and intervention most adequately molds a “well-rounded society,” and a constitutional, ethical procedure that places genuine criminals behind bars should theoretically serve in the best interests of the people.

Constitutionality

An observation of past and present cases can determine whether or not surreptitious sampling meets the previously set guidelines. One such case argues that it, in fact, does qualify. In a widely cited 1988 Supreme Court case and the first of its kind, *California v. Greenwood*, Justice Byron White delivered the majority opinion that the “Fourth Amendment [does not prohibit] the warrantless search and seizure of garbage left for collection outside the curtilage of a home” (*California v. Greenwood*). In this situation, police found evidence of narcotics use in Greenwood’s trash and subsequently took that trash without a warrant. The Court argues that “the police cannot reasonably be expected to avert their eyes from evidence of criminal activity” that could have been observed by any member of the public. Therefore, what a person knowingly leaves in public, even right outside his own home, is not a subject of Fourth Amendment protection. From these claims, we can conclude that trashed water bottles and cigarette stubs are completely fair game. While some critics may argue that suspects are not aware that they are trashing their own DNA, ignorance of common sense and the law has never been an excuse for innocence. If the person is truly innocent, then a DNA test of the trash will simply confirm that innocence and no harm is done. However, in a constantly changing society that demands more open views and acceptance, we must re-evaluate the Supreme Court’s decision in the current context. Instead of garbage, police are obtaining DNA, which reveals much more than drug use – race, gender, predisposition to disease, etc. – all of which can be exploited for discriminatory and ostracizing purposes. For example, someone could theoretically bribe a police officer to steal another’s DNA – devastatingly sensitive information in the wrong hands – or even commit the crime himself. Considering the ease of obtaining trash from the street, these scenarios do not seem so farfetched. Although we like to believe that our government, and the citizens that it governs, are pure and serve our interests, nobody can deny the existence of corruption in modern

society. While highly unlikely and pessimistic, these examples demonstrate real possibilities that must be addressed to ensure the proper use of surreptitious sampling.

In determining constitutionality, a logical progression requires an inspection of more modern cases, which build upon the Greenwood precedent and unanimously concur that the surreptitious sampling is perfectly legal. While the term itself is not used in case overviews, the materials in question consist of discarded water bottles, cigarette stubs, napkins – all items that surreptitious sampling utilizes – and similar scenarios. In a 2008 case reviewed by an Idaho Court of Appeals, officers had been questioning inmate Kevin Piro and took the water bottle he had been drinking for DNA testing. The sample matched one from a previously unsolved rape case, for which he was subsequently prosecuted. Piro demanded suppression of that DNA evidence, arguing that he retained “reasonable expectation of privacy in the water bottle and his genetic identity” based on the Fourth Amendment (*Kevin Piro v. State of Idaho*). However, leaving the water bottle automatically revoked any expectation of privacy, allowing the police to take the evidence without probable cause. Because he obviously had something to hide, he should not have been so careless as to leave his possessions with the very people trying to convict him. His lack of common sense sealed his own fate, so the police should not be criticized from an ethical perspective for merely using readily available resources. Thus, this court decision significantly establishes the constitutionality of surreptitious sampling in accordance with the Fourth Amendment.

However, the circumstances behind these types of cases do not normally create such clear cut results. In the same year as Piro, Mark Sterling appealed to the New York Supreme Court with a similar desire for DNA evidence suppression. He previously refused the police’s request for a sample of his DNA, so they salvaged remnants of his lunch tray and successfully matched

the DNA to samples from the alleged crime scene. The court used similar reasoning to the Piro case, stipulating that the “milk carton maintained no reasonable expectation of privacy” per the Fourth Amendment (*State of New York v. Mark C Sterling*). However, the morality of this specific case cannot be ignored; Sterling clearly expressed that he did not want his DNA tested, yet the police used arguably backhanded methods to obtain it anyway. Although the courts deem the process legal under the Constitution, shouldn't we respect an individual's wishes and not rely on shady practices to incriminate him? If he is truly guilty, then probable cause should be evident, and a warrant would naturally follow. Persons in custody cannot just refuse to eat, and if they do eat, officers can simply take that trash and sample it without any requirements or restrictions. Perhaps limitations on the usage of surreptitious sampling, like a controlled environment as in Piro's case, would aptly protect suspects from invasive procedures while at the same time forcing police to abide by precautionary regulations. A sample extracted from a milk carton that has mixed with other inmates' trash will have almost guaranteed contamination. On the other hand, the DNA on a closely monitored water bottle that has only been in contact with one person, the suspect, has much less chance of contamination. In this manner, false convictions and probability of error would drop significantly, boosting the credibility of surreptitious sampling as an accurate forensic technique.

Another case where morality comes into question is *State of Washington v. John Nicholas Athan*. Detectives posed as a fictitious law firm and convinced Athan to mail a letter to them. They extracted his DNA from the saliva in the seal, matching the sample to one from a murder case and subsequently charging Athan with second degree murder. The court dismissed Athan's complaints based on two points: the first predictably being that the Athan had no expectation of privacy in his saliva, and the second being that “the police conduct was not so outrageous or

shocking as to warrant dismissing the case” (State of Washington v. Athan). Some may wonder about this statement and argue that this elaborate ruse of faking an entire law firm to obtain a saliva sample was sufficiently outrageous and excessive. One individual cannot hope to defend himself against the vast resources at the government’s disposal. This instance of surreptitious sampling becomes especially interesting because Athan did not trash his saliva in any sense of the word, but merely sent an envelope to a seemingly legitimate corporation. As with Internet phishing, this abuse of surreptitious sampling can be rectified by increased awareness from the public. Once people realize that seemingly harmless items like envelopes contain information much more sensitive than just passwords or credit card PINs, they will become more cautious around their belongings, and the playing field between citizens and law enforcement will be leveled into fair, equal engagements.

What Can Go Wrong?

While police may search trash to solve crime, what’s stopping anyone from doing the same, but for their own nefarious purposes? Few states have actual legislation against the practice of DNA theft, and of those few, virtually none of them provide the means to enforce those laws. Four main reasons explain why DNA theft occurs: make headlines with celebrity DNA, settle paternity/fidelity disputes, blackmail or vengeance, and the fact that DNA tests are so cheap and available through underground companies or direct-to-consumer testing (Joh). Recently, the concept of DNA theft offense has gained popularity and would provide benefits such as compensation for harm done to individuals affected by the theft and a broad message to the public about the seriousness of genetic privacy. Action needs to be taken considering the magnitude of reputational damage that accompanies “exposure of medical information and genetic ties” (Joh). Turning DNA theft into a legal offense will grant the government sufficient

teeth to discourage potential criminals from stealing DNA. In the context of surreptitious sampling, once people discover the ease of which genetic information can be extracted from trash, citizens must be protected. A second connection to surreptitious sampling is the increased awareness of the concept of DNA theft in general. Once people realize that DNA can be used against them, they will be more wary of what they throw out, and suspects that become targets of surreptitious sampling can no longer claim plausible deniability. The process itself will become much more fair, and ethical qualms will diminish. In this manner, critics of surreptitious sampling will be satisfied, and the police can still obtain DNA samples without breaking the law.

DNA Testing

All of the previous arguments have been made on the assumption that DNA testing is, in fact, highly accurate. However, some forensics experts make convincing assertions that DNA testing contains many flaws that compromise its value as a conviction tool. As Berkeley law professor Erin Murphy explains in her article “A Layperson’s Guide to the Subjectivity Inherent in Forensic DNA Typing”, a common procedure used in crime laboratories today is STR (short tandem repeat multiplexing) typing, which includes benefits from high efficacy to low cost. Because the human genome is so similar from person to person, STR typing looks specifically at thirteen loci known for repeats of certain sequences (Murphy). Each locus has two alleles, one from the father and one from the mother, making a total of twenty six alleles that constitute a forensic DNA profile, which is then submitted to the FBI’s genetic profile database, CODIS (Combined Offender DNA Index System). While the process itself seems harmless, two issues arise from DNA sampling. Murphy describes the first issue through an analogy to blood testing. If blood at a crime scene tests O-positive, and two suspects test AB and O-positive, “we can, with unreserved confidence, say that the first suspect is not the killer, but regarding the second

suspect, we can only say that he is included within the class of people that includes the killer (Murphy). Because genetic material works in a similar fashion, DNA sampling is effective in exonerating wrongfully accused suspects, but cannot target individual suspects with 100% accuracy.

The second problem is that contrary to popular belief, the process of DNA extraction from a crime scene contains several imperfections. First of all, the samples themselves may contain impurities due to “exposure to heat, light, moisture, or other degrading elements... [and] minimal or insufficient quantity, especially...from a few cells retrieved from cigarette butts, envelopes, or soda cans” (Murphy). If these techniques are actually inaccurate, from which point the DNA test becomes highly subjective, are we still willing to sacrifice our privacy for the sake of safety? DNA samples are an entirely different matter from normal trash; genetic information is too easily corrupted to definitively convict suspects. Knowing the possibility of inaccuracy, should our individual space be compromised for anything less than an absolute guarantee?

What Now?

As criminals become smarter and more technologically advanced, law enforcement needs better methods of counteracting those improvements to accomplish the monumental task of protecting the public. However, several areas need development before surreptitious sampling can be perfected. First, crime laboratories can enhance their DNA testing technology to more accurately analyze small, impure samples. As tests become more precise, the risk to individual privacy decreases. Second, federal and state governments must pass legislation to protect the average citizen from DNA theft and invasion of genetic privacy. As surreptitious sampling becomes more popular, people other than the police, criminals with much more malicious intent,

can easily obtain a target's genetic information. Safeguards must be placed to prevent these possibilities from becoming real threats. Lastly, everyone would benefit from greater awareness of the situation. As technology expands at a rapid rate in today's society, so do the risks associated with the technology. With genetic manipulation and discrimination becoming increasingly prevalent, the public needs to be informed of their rights and protections. Perhaps a precaution similar to Miranda rights would seal loopholes in surreptitious sampling; detained suspects would be alerted that any abandoned genetic material can and will be used against them.

Whether or not any of these ideas are implemented, the fact remains that DNA sequencing technology will only become cheaper, easier, and more readily available. With direct-to-consumer DNA testing companies like 23andMe on the rise, who knows what kind of damage a stray sample of DNA can do? Especially with entire genome sequencing around \$5000 and dropping, a number unheard of 5 or 10 years ago, people will be able to spend minimal amounts of money for access to incredibly sensitive information, especially if it does not belong to them (Wetterstrand). Power of this magnitude cannot be left unregulated in the hands of the public, considering that the technology will only advance with time, possibly even branching out to metabolites and RNA. Much work needs to be done in harnessing DNA testing for solely professional purposes, but the potential of DNA forensics is too promising to leave untapped. I believe that with proper and realistic restrictions, surreptitious sampling could become the primary crime deterrent of the future.

Works Cited

California v. Greenwood. No. 86-684. Supreme Court of the U.S. 16 May 1988. *Cornell Law Web*.

Harmon, Amy. "The DNA Age - Defense Lawyers Fight DNA Samples Gained on Sly - Series - NYTimes.com." *The New York Times - Breaking News, World News & Multimedia*. N.p., 3 Apr. 2008. Web. 23 Oct. 2012. <http://www.nytimes.com/2008/04/03/science/03dna.html?_r=2&pagewanted=all>.

Joh, Elizabeth E. "DNA Theft: Recognizing the Crime of Nonconsensual Genetic Collection and Testing." *Boston University Law Review*. 91 B.U.L. Rev. 665. *LexisNexis Academic*. Web.

Kevin Piro v. State of Idaho. 146 Idaho 86; 190 P.3d 905. Court of Appeals of Idaho. *LexisNexis Academic*. Web.

Krimsky, Sheldon, and Tania Simoncelli. *Genetic Justice: DNA Data Banks, Criminal Investigations, and Civil Liberties*. New York: Columbia UP, 2011. Print.

Laurie, Graeme T. *Genetic Privacy: A Challenge to Medico-legal Norms*. Cambridge, U.K.: Cambridge UP, 2002. Print.

Murphy, Erin. "The Art in the Science of DNA: A Layperson's Guide to the Subjectivity Inherent in Forensic DNA Typing." *Emory Law Journal* (2008): 1-24. Web.

Rothstein, Mark a, and Meghan K Talbott. "The Expanding Use of DNA in Law Enforcement: What Role for Privacy?" *The Journal of law, medicine & ethics : a journal of the American Society of Law, Medicine & Ethics* 34.2 (2006): 153–64.

Shuler, AJ. "Be Careful Where You Spit." *Legal Today* January (2008): n. pag. Web.

State of New York v. Mark C Sterling. 869 N.Y.S.2d 288. Supreme Court of New York, Appellate Division, Third Department. *LexisNexis Academic*. Web.

State of Washington v. John Nicholas Athan. 160 Wn.2d 354; 158 P.3d 27. Supreme Court of Washington. *LexisNexis Academic*. Web.

"The Genetic Information Nondiscrimination Act (GINA)." *Genetics Home Reference*. National Institutes of Health, n.d. Web.

Thompson, WC. "The Potential for Error in Forensic DNA Testing (and How That Complicates the Use of DNA Databases for Criminal Identification)." *Forensic DNA Databases and Race: Issues* (2008): 1–49. Web.

Wetterstrand KA. DNA Sequencing Costs: Data from the NHGRI Genome Sequencing Program (GSP)

Wilson, D. B., D. McClure, and D. Weisburd. "Does Forensic DNA Help to Solve Crime? The Benefit of Sophisticated Answers to Naive Questions." *Journal of Contemporary Criminal Justice* 26.4 (2010): 458–469. Web.

Wilson, DB, David Weisburd, and D McClure. "Use of DNA Testing in Police Investigative Work for Increasing Offender Identification, Arrest, Conviction and Case Clearance." *No. : DOI 10.4073/csr. 2011.7* (2011): n. pag. Web.