

Northeastern University

Watch the Road:

An Ethical and Policy Analysis of License Plate Reader Systems

John Martin

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Professor Woodrow Hartzog

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“How much longer?” your daughter asks anxiously from the back seat as you drive down the highway out of the city for a much-needed getaway from the nine-to-five hustle and bustle. You instinctually reach for your phone to check the ETA. “Oh, that’s right,” you laugh to yourself. You’ve intentionally left your phone and laptop and smartwatch at home; this weekend is about family, not email. And anyway you don’t feel like getting ads about bug spray and sunblock when you get back and your phone has outed you and your recent trip. A police officer passes you on the left. Click. You go through a toll booth before getting off the highway into town. Click. Now just down main street and out to the edge of town where you’re spending the weekend. Click.

Despite your best efforts to leave information-hungry technology behind, your weekend trip has been captured and stored anyway. License plate readers installed on public infrastructure and police vehicles recorded you every step of the way. You get back to your city home on Monday, baffled to see those sunblock ads waiting for you when you switch your phone back on. Or worse, you’re met by two police officers on your front porch ready to arrest and deport you.

The sunblock ad outcome may strike you as a plausible, sad near-future reality where marketers have crept ever deeper into our lives to sell us stuff in exchange for some highway funding. The latter outcome may seem over-the-top. Believe it or not, that is already happening. The U.S. Immigration and Customs Enforcement (ICE) agency recently began using license plate reader (LPR) systems to track historic and real-time movements of vehicles in order to make arrests and deport people.¹ LPRs, like most technology, serve benign and useful functions in our society (i.e. collecting tolls efficiently on the highways), but are increasingly being

¹ Brandom, Russel, “Exclusive: ICE is about to start tracking license plates across the US,” The Verge (2018), <https://www.theverge.com/2018/1/26/16932350/ice-immigration-customs-license-plate-recognition-contract-vigilant-solutions>.

deployed broadly and connected to massive databases that can be queried instantly and cheaply.² These systems can describe years of travel history and current location data about innocent U.S. citizens.³ Yet they have little policy or law guiding them.⁴

This paper will stand to analyze the ethical and policy implications of LPR systems. The paper will begin with a review of some of the existing literature surrounding LPR systems and similar surveillance technologies, will move on to an attempt to place LPR systems among various ethical frameworks including the Doctrine of the Mean, Kantian deontology, and consequentialism, and then among relevant existing or proposed policies, and finally will conclude with a suggestion for an implementable policy to regulate LPR systems moving forward.

Literature Review

When researching the topic of license plate readers, one generally finds authors approaching the problem by applying the Fourth Amendment as well as Supreme Court rulings such as *Katz v. United States* and *United States v. Jones*, which offer nothing explicitly about LPR systems, but seem to be the most relevant cases for their content about surveillance and vehicles.⁵ However, these rulings give insight into surveilling one individual, whereas LPR systems offer this ability as well as dragnet surveillance. This distinction should be kept in mind when analyzing the ethical and legal nature of LPRs.

² Gierlack, Keith, Williams, Shara, LaTourrette, Tom, Anderson, James M., Mayer, Lauren A., and Zmud, Johanna, "License Plate Readers for Law Enforcement: Opportunities and Obstacles," *Santa Monica: RAND Corporation* (2014): 16-17.

³ Ibid.

⁴ Ibid. 71-72.

⁵ Ibid. 52-53.

Bankston and Soltani use *United States v. Jones* to suggest that the decrease in monetary cost to conduct surveillance as technology advances is a meaningful and actionable metric for determining when surveillance “runs afoul of the Fourth Amendment.”⁶ Though their analysis is based on a GPS device, one could reasonably come to the same conclusion for LPR systems as classifying as “tiny constables.” LPR systems are not cheap – a 2010 estimate puts them at \$20,000 to \$25,000,⁷ and certain fixed installments can cost as much as \$100,000⁸ – but are generally paid for with federal grants,⁹ which may make them attractive to local police or transportation departments, and costs of the technology are likely falling given the general decreasing cost of technology and increasing LPR adoption.¹⁰

There has been some speculation among authors about what might be the privacy repercussions of LPR systems. Gierlack suggests that such a system’s resemblance to “the conditionally long-accepted practice of an officer keeping an eye out for a particular vehicle” will ultimately dictate the legal outcomes for LPR, which suggests something about privacy.¹¹ Individuals naturally give up some privacy when moving about in public, but perhaps they only

⁶ Bankston, Kevin, and Soltani, Ashkan, “Tiny Constables and the Cost of Surveillance: Making Cents Out of *United States v. Jones*,” *123 Yale L.J. Online* 335 (2014): 337.

⁷ Lum, Cinthia, Merola, Linda, Willis, Julie, and Cave, Breanne, “License Plate Recognition Technology (LPR): Impact Evaluation and Community Assessment,” George Madison University (2010): 5.

⁸ Gierlack, “License Plate Readers,” 24.

⁹ Lum, “License Plate Recognition,” 19; Gierlack, “License Plate Readers,” 67. (“In the case of LPR technology for agencies in our sample, they did not need to come up with big sums from their own budgets because most of the funding for this technology came externally. Agencies have received significant state and federal grants for counterterrorism and security initiatives, and these have let them upgrade their technology, including buying LPR systems.”)

¹⁰ Lum, “License Plate Recognition,” 64. (“In our national survey of police agencies, we found that 37 percent of large agencies already use LPR and that, as of September 2009, nearly one-third of large agencies not currently using LPR plan to acquire it within one year.”)

¹¹ Gierlack, “License Plate Readers,” 51.

expect this to the extent that other persons see them. Being followed, tracked, or otherwise regularly spied on is something altogether different than being seen by a passing officer.

Other researchers have approached the issue with the goal of learning what would make the public more accepting of LPR technology and law enforcement use of such systems. Researchers like Cynthia Lum and Linda Merola take the position that police departments should use LPRs to their fullest potential, or otherwise present to this end without stating an explicit ethical position.¹²

Ethical Analysis

Law enforcement is necessarily at odds with personal liberty. This tug-of-war between freedom and regulation is not new, and neither is spying or searches. Individual citizens have a stake in LPR technology because they stand to lose their freedom of uninhibited movement, their privacy, and their moral dignity, or their right to be treated ethically. These are all terminal values for individuals that should be taken seriously. Law enforcement and the government stand to gain far greater breath of information about all citizens as an instrument to locating and arresting wrongdoers, and generally increasing safety. Manufactures of LPR systems and organizations that maintain LPR databases stand to gain monetary value from increasingly pervasive LPR deployment and use. The ethical balance seems to lay fundamentally between individual personal liberty and the safety gained from more effective police surveillance. Intuitively, this appeals to Aristotle's Doctrine of the Mean, which essentially claims that moral virtue lies between two extremes of immorality.¹³ Unlimited law enforcement power and unlimited personal liberty are both extremes that will produce poor ethical results. Some balance

¹² Lum, "License Plate Recognition," 62.

¹³ Stanford Encyclopedia of Philosophy, "Aristotle's Ethics," <https://plato.stanford.edu/entries/aristotle-ethics/>.

between the two may be the best society can do, and this is what Bankston and Soltani suggest when considering the Fourth Amendment's balancing act of reining in law enforcement.¹⁴

Often people assume, because they are not currently doing anything wrong, they should take no issue with invasive surveillance; the surveillance will only be a detriment to the wrongdoers. This anecdote is reinforced by research that found LPR support in a community is dependent on its use against "average" members of society.¹⁵ In other words, likelihood of support increases when an individual believes other people, but not herself, will be negatively impacted by the system. Is this morally sound? This hinges largely on the distinction between any individual "average" person and a "wrongdoer."

One might consider this argument in terms of deontology, specifically paying attention to what Kantians profess. The second formulation of the categorical imperative is, "Act in such a way that you treat humanity, whether in your own person or in the person of any other, never merely as a means to an end, but always at the same time as an end."¹⁶ Said another way, it is morally wrong to use or be used as a means to some end. Of course, a LPR system uses all individuals as a means to the end of potentially providing safety by arresting them when they become wrongdoers. If suddenly a subset of citizens – say, the Japanese or Mexicans – become wrongdoers for traveling freely on the roads – since, for example, they have been summoned to camps or are to be separated from their families – the system acts as a tool for exploiting people for some political end. In short, if the definition of wrongdoer can and does change arbitrarily,

¹⁴ Bankston and Soltani, "Tiny Constables," 337. In reference to: Kerr, Orin S., "An Equilibrium-Adjustment Theory of the Fourth Amendment," *125 Harv. L. Rev.* 476 (2011).

¹⁵ Merola, Linda M., Lum, Cynthia, Cave, Breanne, and Hibdon, Julie, "Community support for license plate recognition", *Policing: An International Journal*, Vol. 37 Issue: 1 (2014): 30-51.

¹⁶ Stanford Encyclopedia of Philosophy, "Kant's Moral Philosophy," <https://plato.stanford.edu/entries/kant-moral/>.

the very electors and operators of the system may fall victim to it. There is nothing inhumane about any given individual categorized as a wrongdoer, and their moral worth must be protected along with anyone's.

Taken from another perspective, the end for LPR manufactures may very well be wealth. Running this through the same deontological framework, their position would then be reducing the personal liberties of citizens for the sake of turning profits. This is intensely morally wrong, not just by a deontological view, but by most moral frameworks. Exploiting the terminal values of individuals as a means to the end of wealth is tantamount to slavery. It is inexcusable and so should not be taken seriously when weighing benefits of LPR systems.

Well, one might say, if the system is morally wrong when it collects the movements of the tin hat wearers, they should simply opt to use roads without electronic tolls. Humor the notion that LPR collection systems are only deployed on toll roads and consider the first formulation of the categorical imperative: "Act only according to that maxim whereby you can at the same time will that it should become universal law."¹⁷ Said another way, if one can imagine an action applied to herself and everyone else, it is morally sound. This formulation generates absurdities when bad morals are applied (i.e. if everyone always lied, then trust and language itself would be destroyed). If then, in order to protect one's freedom she needs to stay off toll roads, no one would ever use the roads with tolls. Or perhaps she and everyone else would have to stop driving altogether.

Dragnet LPR systems do not fare well against deontological moral analysis, but through a consequentialist lens they might. Consequentialism seeks to maximize the overall outcome of

¹⁷ Stanford Encyclopedia of Philosophy, "Kant's Moral Philosophy," <https://plato.stanford.edu/entries/kant-moral/>.

utility or happiness of all people when considering the morality of a particular action.¹⁸ Law enforcement exists to provide safety, a terminal value, to individuals. This is a noble cause, and its ends often justify the means of reducing personal liberty. For dragnet LPR systems to be ethical via consequentialism, it needs to be reasonably clear that LPR systems are effective at stopping violent crime and providing safety. There seems to be evidence to both support and refute this. The primary use of LPR systems used by law enforcement is to find stolen vehicles and vehicles associated with unpaid fines, and they are effective at doing this.¹⁹ However, LPR systems accomplish this retroactively, and evidence suggests that the technology does not significantly reduce or prevent crime from occurring to begin with.²⁰ As is usually the case when evaluating consequentialist ethics, it is hard to determine whether the gained safety from LPR systems provides more utility or happiness than that which is lost in the reduction of individuals' personal liberty. If it cannot be shown the such systems reliably prevent crime and thus increase safety, perhaps the deployment of LPR technology is immoral on consequentialist grounds.

For further ethical insight, one might turn to existing ethical standards that are applied to other modern technologies. The Association for Computing Machinery has detailed their "General Moral Imperatives" within their Code of Ethics and Professional Conduct since 1992, which includes, "(1.7) Respect the privacy of others." It reads:

This imperative implies that only the necessary amount of personal information be collected in a system, that retention and disposal periods for that information

¹⁸ Stanford Encyclopedia of Philosophy, "Consequentialism," <https://plato.stanford.edu/entries/consequentialism/>.

¹⁹ Gierlack, "License Plate Readers," 25-26.

²⁰ Lum, "License Plate Recognition," 5; Taylor, Bruce, Koper, Christopher, Woods, Daniel, "Combating Vehicle Theft in Arizona: A Randomized Experiment With License Plate Recognition Technology," *Georgia State University Criminal Justice Review* 37 (2012): 38.

be clearly defined and enforced, and that **personal information gathered for a specific purpose not be used for other purposes** without consent of the individual(s).²¹

LPR systems that are serving a function other than surveilling cars for law enforcement, such as performing electronic tolling, are not being used exclusively for their primary purpose. Civilians drive down public roadways and through tolls not suspecting that, in addition to being tolled, their travel information is being stored for extended or unlimited periods of with intent to track their movements. Thus, consent is not given. Furthermore, retention and disposal of this information is not clearly defined, and may vary depending on the state or system. One could expect that LPRs in tolling systems would only maintain information long enough to collect funds. In cases where funds are collected immediately and do not need to be requested via mail, etc., this retention period might reasonably be defined as short as one minute.

LPR systems also often violate aspects of the Fair Information Practice Principles (FIPPs): (1) LPR systems generally do not provides an obvious statement of privacy for handling of license plate data on the road, or otherwise provides the information in way that citizens do not have to actively seek. This is likely because such policies are inconsistent or do not exist.²² (2) Citizens using the public roadways have no way to withdraw consent from the collection. The only option would be to not use the roadways, which is unreasonable. (3) There is no direct way for citizens to access the information

²¹ Association for Computing Machinery, “ACM Code of Ethics and Professional Conduct,” <https://www.acm.org/about-acm/acm-code-of-ethics-and-professional-conduct>. (The emphasis is my own.)

²² Gierlack, “License Plate Readers,” 71-72.

that is about them. Indeed, the ICE is contracting with Vigilant Systems, who refuses even to talk to journalists about their information and participation with various government and policing offices.²³ (4) Systems have been found to be insecure, exposing personal movement information, citation and violation information, and even information relating individuals to gangs and terrorism. This happened recently for contractors working with the Boston Police Department, which exposed LPR data via an insecure online database.²⁴

Policy Analysis

As it stands, police departments seem to have little to no consistent policy or set of guidelines for using LPR systems.²⁵ The ACLU has called for the adoption of policies and laws that protect privacy and prevent governmental tracking of civilian movements without offering any specific policy suggestion.²⁶ Researchers at George Madison University released a report in 2010 detailing a survey of municipal police forces using LPRs and the policies they have in place regarding their use. Per the study, 40% of departments created some standard operations procedure for operating the technology and only 14.3% consulted with community leaders about implementing the technology.²⁷ Police departments arbitrarily decide how long to store data and often allow anyone in the department to query the data without any restriction or guiding

²³ Brandom, "Exclusive: ICE," The Verge.

²⁴ Crockford, Kade, "Boston's License Plate Reader Database Was Online in Plain Text With No Password Protection," American Civil Liberties Union (2015), <https://www.aclu.org/blog/privacy-technology/location-tracking/bostons-license-plate-reader-database-was-online-plain>.

²⁵ Gierlack, "License Plate Readers," 71-72.

²⁶ American Civil Liberties Union, Automatic License Plate Readers, <https://www.aclu.org/issues/privacy-technology/location-tracking/automatic-license-plate-readers>.

²⁷ Lum, "License Plate Recognition," 25.

policy.²⁸ Lack of procedure and lack of reasoned and explicit data retention lengths insult the expectations for respect set forth in the ACM Code of Ethics as well as the principles in the FIPPs. All told, the policies of law enforcement surrounding LPRs in its current state could not measurably get much more lax.

The same researchers from George Madison surveyed citizens about what could be done to help alleviate their concerns about police using LPR technology. Respondents were more receptive to the suggestion that police acquire a court order before using the LPR database than to the suggestion that police simply erase all LPR data.²⁹ This suggests that individuals do not think the system is useless, but are simply concerned about its potential overuse or abuse. This corroborates research that suggests individuals are concerned about the technology being used against “average” citizens.³⁰ This suggests that a decent policy for law enforcement to adopt would not necessarily involve the eradication of the system, but more judicial oversight and restrictions on its use.

Some states, but not many, have passed laws regulating roadway surveillance. New Hampshire prohibits surveillance on the roadways that is not undertaken on a case-by-case basis.³¹ Maine allows such surveillance, but explicitly restricts law enforcement retention of LPR data to 21 days.³² These laws capture principles may be useful in formulating a general policy. New Hampshire’s case-by-case stipulation reflects concerns that these systems should be restricted to use only when permission is granted from courts. Maine’s 21-day data retention

²⁸ Gierlack, “License Plate Readers,” 71-72.

²⁹ Lum, “License Plate Recognition,” 102. (“If the police agree to get some type of special permission (such as a court order) before using saved LPR data”: 42.7%; “If the police immediately erase all LPR data”: 13.7%)

³⁰ Merola, “Community support,” 30-51.

³¹ Gierlack, “License Plate Readers,” 56-57.

³² Ibid.

limit reflects general data principles present in existing policies like the ACM Code of Ethics. Of course, less judicial oversight and longer retention periods will be more attractive to law enforcement, but they may be reasonable guards to striking the balance between protecting personal liberty and having these systems in society.

It might be argued that implementing policies that require judicial approval for using the LPR database would add too much of a cost of resources for police departments to get approval and for judges to grant approval. This is only true under the assumption that such systems are only valuable if they can be queried often and indiscriminately. It might also be argued that restricting data retention to a short period of time undermines the value of the technology as a movement history database, which could be used to determine regular whereabouts of a criminal. This, it seems, is exactly right. Limiting the length of data retention will squander some of the system's potential surveillance power, but will lessen the blow to individuals' right to privacy. The system also seems no less effective in its major use (locating stolen vehicles) if these limitations are applied.

Conclusion

Given the rather staunchly unethical current state of LPR implementation, one might want to take an altogether stronger approach in proposing a regulatory LPR policy. On Kantian grounds, LPR surveillance seems fundamentally unethical, but might be ethical viewed consequentially as providing sufficient safety and crime prevention in a community. Could this still be achievable if strict guidelines for using the technology were applied? Suppose, taking from the FIPPs and ACM Code of Ethics, a policy was adopted where LPR systems were: (1) limited in their length of data retention, (2) restricted in access to specific officers with judicial consent, (3) not deployed in such a way that any individual LPR is serving a civilian necessity

(i.e. collecting tolls) while at the same time serving as eyes of law enforcement, (4) accompanied with an accessible and clear statement of privacy to community leaders and the public. Such a policy does not seem to significantly undermine the tool for law enforcement, but holds much more ethical legitimacy against established standards and is less morally offensive to citizens.

This four-part policy patches many of the aforementioned ethical downfalls and brings the balance between law enforcement and personal liberty closer to the golden mean. It curtails dragnet surveillance and satisfies ACM's retention clause by imposing retention limits. It respects the individual's freedom to move about uninhibited and satisfies ACM's intended use clause by restricting the system from civilian uses. It captures the concerns of community members and states that believe some form of court approval is required. And it informs the people of what information is being collected and why, which embodies some of the principles of the FIPPs. By significantly reigning in the abuses against personal moral dignity, the balance may be tipped to provide law enforcement a better chance at being ethically justified in its use of LPR technology to keep our communities safe.

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