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Surveillance in Chicago: Growing, but for what purpose?

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Chicago is now one of the leading cities in the world in using surveillance technology. This growth began in 2003 when cameras were used to fight street level crime. Since then, Chicago's camera network has grown to over 25,000 units, along with the use of a variety of new technologies. This chapter explains this growth and how it affects policing.

Chicago has a unique history and geography compared to other large cities. Geographically it is the third largest city in the United States with 2.7 million residents. The city encompasses over 230 square miles. The Chicago Police Department (CPD) is the second largest in the United States with over 13,000 officers. Since 2000, three different superintendents have each brought slightly different approaches to tackling crime. But a common strand through all of them was a willingness to adopt new technologies and new tactics to fight crime.

This chapter begins with developments prior to 2003: the Red Squad and several important initiatives during the 1990s. The discussion focuses on the development and evolution of the cameras the police use in Chicago, and as well, the city's adoption of a myriad of other surveillance technologies. Additional surveillance themes that I address include their effectiveness, changes in police tactics, and risks to civil liberties. The chapter ends concludes with a short history of red light and speed cameras, recent innovations revealing strong parallels.

The Red Squad

Government surveillance in Chicago goes back to the late nineteenth century ("Red Squad," 2004). After the Haymarket bombing in 1886, Chicago police aggressively targeted suspected anarchists and labor activists. Over the

next hundred years, Chicago police surveilled, and even infiltrated, a variety of social and political groups, such as the American Civil Liberties Union (ACLU), the League of Women Voters, the National Association for the Advancement of Colored People, the National Lawyers Guild, National Council of Churches, and Operation PUSH. The group responsible for these efforts is commonly known as the Red Squad.

The favorite tool of the Red Squad was the camera (Donner, 1990). Cameras were used to help document members of groups, as well as openly record the persons attending and events marking political rallies and demonstrations. As automobile ownership became widespread, at such gatherings the police would record the license plate numbers of attendees as well. The result: police knew who was present, and members of these groups were also aware that they were being watched.

The Red Squad did not stop at surveillance. More questionable techniques, such as illegal wiretaps and break-ins, were also used to gather intelligence. Undercover police officers would even join these targeted groups, and sometimes gained leadership positions within the organizations. This allowed the Red Squad to collect membership lists, intimidate participants, and manipulate the group internally. The Red Squad collected a massive volume of information. By 1960, there were surveillance files on approximately 117,000 Chicagoans, 141,000 out-of-towners, and 14,000 organizations ("Red Squad," 2004). These records were all kept on paper! Although the Red Squad later destroyed many of these records, a partial set of them is available at the Chicago Historical Society.

In 1974, a lawsuit was filed against the Chicago Police Department on behalf of 15 organizations, four churches, and 18 individuals. Eleven years later, a court decision ended what was termed the Chicago Police Department's Subversive Activities Unit. As a temporary measure, a consent decree was established that provided rules for and limits on the Chicago police's investigation of activities protected by the First Amendment. In 2001, lawyers for the City and the Police Department were successful in having the consent decree modified, which removed various constraints imposed by the consent decree. The consent decree was ultimately dissolved in 2009 (Mihalopoulos, 2009).

The 1990s

During the 1990s, the Chicago police began to focus on a strategy of community policing. The strategy was known as Chicago Alternative Policing Strategy (CAPS). In contrast to the reactive approach of only intervening after problems arose, CAPS focused on solving problems proactively by having the police get involved in communities. The new CAPS method meant that now police worked hand in hand with city service agencies to help people. A touchstone of the CAPS approach was meetings between residents and the police. The result of these community interactions was a change in perception of the police (Skogan, 2002). By 2000, most Chicagoans rated police positively on three measures: demeanor, responsiveness, and performance. Additionally, crime dropped as this program was implemented. For example, robbery and gun-related offenses dropped significantly during the 1990s.

At the same time, Chicago was struggling to keep up with the high volume of emergency ("911") calls. The CPD was answering only about half its calls within 12 seconds or less (Martin, 1996). This delayed response was not good, and led the City to build a new state of the art communications center in 1995, the Chicago Emergency Communications Center (CECC). Emergency communications for police, fire, and emergency medical services were now consolidated. The project was successful; with the new center on line, over 90% of 911 calls were answered within 1.2 seconds (Martin, 1996).

The communications center used the latest computer technologies and interconnected to Chicago's vast fiber optic network. Chicago is rare among U.S. cities in that the city government owns and leases over 1,000 miles of optical fiber. This enables the government to transmit enormous quantities of information throughout the city. For example, dispatch operators within the CECC have access to an advanced mapping system to assist in taking calls. Over time, as camera surveillance grew, the personnel within the CECC gained access to these feeds at the CECC. The CECC's central role is widely recognized, and today it holds the City's Operations Center, which monitors a variety of systems from cameras to traffic management. It also holds the City Incident Center, which monitors traditional infrastructure as well as a Joint Operations Center for coordinating with all emergency and command personnel (Careless, 2007).

The third significant development during the 1990s was the move to computerized databases (Careless, 2007). The police developed the Criminal History Records Information System (CHRIS). The purpose of this database was to move away from handwritten reports that were difficult to search and share. Police leadership recognized that by making this information readily available,

the result would be more effective policing. The first version of CHRIS proved difficult to use. One widely circulated anecdote was that a police newsletter warned the IT developers that they had better "watch out" on the streets.

The disappointment with CHRIS led the Police Department to team up with Oracle and develop a new web-based interface for CHRIS. The interface would mimic existing forms that police were accustomed to use. Designing the form to be easily accessible would enable police officers out in the field to access the database. This system is known as Citizen's Law Enforcement Analysis and Reporting (CLEAR), and was launched in 2003. CLEAR is a success. Police are able to access criminal and case histories, outstanding warrants, 911 calls, crime scenes, vehicle license plate data, and geographical crime data. The largest police database in the country, CLEAR contains over 10 million individual data sets and is growing daily (Department, 2007). While on patrol, police can now look up a license plate, a suspect's details, or even police booking photographs.

Blue Light Cameras

In 2001, the number of homicides increased in the city for the first time in seven years ("Chicago Homicides Outnumber U.S. Troop Killings In Afghanistan," 2002). Chicago led the nation in homicides with a homicide rate per capita that was substantially larger than Los Angeles or New York. In fact, many observers viewed New York as the new model, as it had steadily dropped homicides to about a third of Chicago on a per capita basis. New York's success was attributed to the "broken windows" policing that advocated zero tolerance against petty crimes and the use of COMPSTAT (COMParative STATistics)

(Chan, 2007). COMPSTAT relied on quantitative analysis of crime incidents, which was then used to hold district-level police leaders accountable.

The methods used in New York eventually made their way to Chicago. One important difference between circumstances in the two cities was Chicago's major problem with gangs. According to the police, about half of Chicago's homicides were attributed to gang activity or drug distribution. To target gangs, in July 2003, Chicago started Operation Disruption (Theodore, Martin, & Hollon, 2006). This was a pilot program to monitor high crime areas. The idea was to use high visibility cameras as a deterrent that would disrupt violent crime and narcotics sales. This was the first time in the United States that cameras were deployed to fight street crime.

Operation Disruption used 30 specifically designed cameras (Chicago Police Department, 2007). The cameras were constructed of lightweight, bulletproof materials and coated with a highly reflective exterior to maximize visibility. Each camera was equipped with a flashing blue light at the top, trademark checkerboard markings of the Chicago Police Department, and a large Chicago Police logo. This made them highly visible and communicated to the public that the area was under police surveillance.

The cameras were capable of zooming and rotating 360 degrees. They also had night vision capability, so they could operate 24 hours a day in all weather conditions. They operated wirelessly, and video was transmitted to camera control cases that were used by police officers in the field. The control cases allowed officers to manipulate the cameras from remote locations using a portable terminal equipped with a monitor and joystick. With the joystick, officers could pan 360 degrees and zoom in on visibly suspicious activity.

The Chicago program made national news, as it was a highly aggressive strategy using innovative technology. The blue light became emblematic for surveillance in Chicago. A few residents complained about the cameras. Typically, the complaints were either that the lights were distracting, or that neighborhoods were labeled as dangerous due to presence of the cameras. But most people accepted them, and there was no popular resistance or political push-back on the cameras (Washburn, 2006). This led the city to expand the program by another 50 cameras at the end of 2003.

Watching Us

The success of Operation Disruption led to the purchase of more cameras. With this next purchase, and successive purchases, the Police Department improved the technological capabilities of the cameras. The second generation of pod cameras was designed to be movable, which was enabled by wireless technology (Chicago Police Department, 2007). Using technology developed by the firm of Safety Dynamics, some of the second generation PODs could detect gunfire. These units transmitted gunshot alerts, as well as the usual video images, directly to the City's Emergency Management and Communications Center.

The officer in charge of the camera program, Ron Huberman, argued that the cameras served as a force multiplier. In his opinion, the technology was akin to giving the police more eyes and ears across the city. The use of these new technologies became a hallmark of Chicago policing, and government officials from around the world came to study the camera program. The promise of

cameras led Mayor Daley to say that by 2016, “we'll have [cameras on] almost every block” (Spielman, 2006). His enthusiasm was shared by many local residents. A poll in Chicago found 58% of voters supported Chicago’s video security network ("Chicago voters don't mind surveillance," 2006).

Just as police strategies change, the design of the cameras changed. By 2005, the city moved to smaller “hybrid” PODS with a CPD star and checkerboard. They had flashing blue lights, but they didn't operate continuously. From the control center, operators could start the lights flashing at any time. This was the start of a movement to smaller, less overt cameras that had the capability to disengage the flashing blue light atop the devices.

The next step was the micro-PODS that had no CPD police markings, optional flashing blue lights, and are exclusively wireless. These cameras were first installed in June 2006 and were 15 pounds (compared to 100), unobtrusive (with no flashing light), and cheaper ($6,000 compared to $20,000). The new cameras can be easily moved and look like a streetlight. They have zoom lenses, night vision capability and can rotate 360 degrees.

The majority of the outdoor cameras presently in use are these micro-PODs. Their design is reflective of the department’s current strategy. Initially, the surveillance strategy turned on the installation of highly conspicuous cameras announcing police presence and aiming to deter criminal activity. The newer cameras blend into the background and make people feel as if they can always be watched, no matter where they go. And in this way, we are moving toward the world Daley imagined.

Expanding Technologies

Along with the increase in police surveillance cameras, the City began to consolidate its many existing camera networks. The CECC gained access to cameras in the city's airports, parks, and McCormick Place. In 2008, the City added 5,000 public school cameras to its network (Spielman, 2008). The Chicago Transit Authority connected its cameras, while also increasing the number of cameras in stations, buses, and subway cars (Hilkevitch, 2013). By 2014, the CECC was able to access almost 25,000 cameras throughout the city (Main, 2013a).

The initial focus of the City was its own cameras, but in recent years, the City has encouraged owners of private cameras to join its network (Cullotta, 2009). For example, the City has access to the cameras at Willis Tower. In all, over a hundred private entities have agreed to allow the City to access their networks. The City maintains that these cameras are not to be used to combat everyday street-level crime; their use is only for emergency situations.

Along with the growth in the number of cameras, the city has used a variety of technologies to expand the functionality of its surveillance network. Gunshot detection technology consists of sensors placed around the city that presumably allow the police to locate a gunshot. In 2004, a trial of this Safety Dynamics technology was conducted, and later, in 2007, a pilot program rolled out ShotSpotter. The City found the technology was "not entirely effective" (Krauser, 2012) . In three separate tests of gunshot sensors between 2003 and 2007 in the West Side's Harrison Police District, only once did the technology actually send a warning prior to an incoming call to 911 reporting the shooting. The technology was expensive as well, almost $200,000 per square mile. Instead of

installing it throughout Chicago's 200+ square miles, the city is only installing the technology in the downtown Loop area.

A more revolutionary technology is represented by video analytic software. Video analytic software allows computers to take over the routine monitoring of surveillance cameras, with police personnel alerted when something happens. This is tremendously useful given the thousands of cameras in the City's network. By way of its object detection feature, the camera can set up a spatial trip wire to function as a virtual fence. For example, at Union Station a virtual fence has been created detecting any cars that park in front of the building. When the software detects a car, a message notifies the camera operator that someone is parking and human observation is in order.

The police can use video analytic software to crunch through hundreds of hours of video. To cite a particular instance of this application, the CPD received a report that an individual had buried something in a park (Isackson, 2009). They used video analytics to go through months of footage to look for an image of a shovel. The computers took on this laborious task, but ultimately came up with no shovel.

The City has begun using license plate recognition (LPR) technology that can identify 3,600 license plates per hour! This technology relies on a computer identifying the characters on a license plate from a photograph. The data collected typically includes the date, location, and pictures of the license plate. By 2012, the city had scanned over 500 million license plate images. This data set permits the City to track the movement of cars within its boundaries and identify where people have driven. Concerns over this scenario have led to calls by the ACLU of Illinois for stricter controls on the use of this data (American Civil

Liberties Union, 2013). In response, the City has stated that it only keeps the data for seven weeks unless the license plate has been, for some reason, "flagged."

The ability of LPR to recognize cars led the City to adapt the technology to parking enforcement ("Smile, you're on the street sweeper cam," 2008). Cameras were placed on six street sweepers to identity and ticket cars. The idea seemed to work in early tests and the project, dubbed "Sweepercam," earned a national award in 2009. However, the complexities of Chicago's parking rules and signage led to the project's demise. The City failed to develop a standard set of protocols to be used by sweepers across Chicago.

In 2013 the City began using facial recognition software (Main, 2013a). For some, this is the "holy grail" of surveillance technologies, with the promise of identifying individuals via the camera lens. The City has access to 4.5 million photos taken when crime suspects have been "booked." With facial recognition software, police can compare these photos to those in video footage. This was exemplified when the police successfully used facial recognition technology to identify a crime suspect observed by a CTA surveillance camera. As the City continues to roll out higher resolution cameras and improve ambient lighting, it can be expected that facial recognition technology will become a more prominent crime-fighting tool.

Impact on Crime

With the millions of dollars spent on technological surveillance and the increased ability of the police to watch us, the issue of effectiveness becomes salient. Several pieces of recent research speak to this matter. While they

collectively cast doubt on the role of surveillance in significantly affecting crime levels, they also offer insights into more effective methods and how police strategies may evolve in the future.

Two dominant justifications for camera surveillance have emerged in the United States. The first is the investigative function of the cameras. For example, after several recent high-profile terrorism cases, police circulated surveillance footage of terrorists. Whether the camera images have been instrumental in solving such cases is an area of debate. Critics have pointed out that surveillance footage is typically not the key factor in solving particular crimes (Warrick, Finn, & Nakashima, 2010). Nevertheless, cameras can assist as an investigative aid for the police.

The second justification for cameras is reducing or preventing crime. A theoretical explanation emerges from situational crime prevention, which proposes that a rational criminal is likely to avoid committing a crime in the presence of cameras because of the perceived risk of capture. For example, overt camera configurations—those that are in view of the public and often accompanied by signs indicating that the area is under surveillance—represent a characteristic application of situational crime prevention (Ratcliffe, 2006). All other things being equal, the presence of cameras is presumed to lead a rational burglar to avoid the area. Another anthropomorphic explanation for how cameras reduce crime is the concept of cameras as a "force multiplier," as was maintained by former Chicago Police official Ron Huberman (Buchanan, 2003). As such, cameras are analogized to eyes, allowing the same number of police officers to monitor a more expansive area.

The United Kingdom (UK) has a rich history of surveillance and the most empirically grounded research (Gill & Spriggs, 2005). In the UK, police have found that cameras have a very small impact on crime. The most effective use of cameras has been in enclosed parking lots. In five studies on enclosed parking lots, researchers found reductions in vehicle crimes; however, in all five studies there were also other interventions such as improved lighting, fencing, notices about CCTV, and increased security personnel. As a result, it is unclear how much of the impact derived from the cameras in particular. These results have also been mirror in research conducted in the United States, notably studies of the relationship of surveillance cameras and crime in San Francisco and Los Angeles (Cameron, Kolodinski, May, & Williams, 2008).

However, in my own analysis of over one hundred cameras placed throughout Chicago, I found that the placement of the camera has had a significant effect (Shah & Braithwaite, 2013). Cameras placed in high crime areas were very effective, while cameras in other areas had little effect on reducing crime. This study suggests that fewer targeted cameras in crime hotspots will have a greater impact than a widely diffused camera dragnet. This view was supported by an Urban Institute study that examined two areas in Chicago with surveillance cameras, and found that crime dropped in the higher crime neighborhood (La Vigne, 2011). The researchers concluded that surveillance cameras yielded the greatest impact when active monitoring and real-time intervention were implemented. The fundamental inference growing out of this research is that cameras in high crime areas are, indeed, widely recognized and that common knowledge tends to deter criminal activity.

Wesley Skogan of Northwestern University has studied crime trends in Chicago from a variety of perspectives. His research has considered many of the established theories about the causes of crime, and compared them to local data (Skogan, 2007). Having reviewed the role of technological innovations, such as cameras, in crime control, he concludes that technology has not been a significant factor in reducing crime rates. Instead, Chicago mirrors the trend of other large cities that are losing young people ranging from ages 15 to 24, a cohort that is statistically more likely to commit crime. And analogously, within the city poor immigrants (a relatively "low crime" group) are displacing poor, native-born Americans (a relatively "high crime" group).

Evolving Techniques in Police Practice

Chicago's police have introduced a wide array of surveillance technologies, and in turn, amassed a huge body of data. This is changing police tactics. The most profound change is that police are attempting to predict crime and respond accordingly. Two techniques that are grounded in enhanced surveillance and data collection/analysis are "predictive hotspots" and the "heat list."

The accumulation of years of data has allowed the CPD to identify hotspots of criminal activity. In Chicago, there are hotspots that comprise two percent of the geographic area, but account for 10 percent of the city's crime (Main, 2013b). Given this analytical insight, the police know to target more resources to these locations. However, crime hotspots, over time, tend to move. To combat this, one application of predictive analytics is to identify

neighborhoods where crime is likely to increase. This is analogous to a weather forecast for crime. By feeding a system more real-time data, it is possible to identify crimes before they occur. In one example, the CPD's predictive unit analyzed 911 calls and was able to anticipate a shooting minutes before it happened (Main, 2011).

Another twist of predictive analytics is identifying people at risk. This work is based on social network analysis and the research of sociologist Andrew Papachristos from the University of Chicago. Social network analysis studies the connections between people. Papachristos analyzed the social networks related to homicides in several cities including Chicago. In Chicago, he found a strong connection between shooters and shooting victims (Papachristos, 2013) (Moser, 2013). Very frequently, shooting victims actually knew the individual who had fired at them.

The police are currently using this insight to reduce shootings by placing 400 at-risk people—identified via data base analysis—on their so-called heat list (Gorner, 2013). The heat list is compiled from data including a person's rap sheet, his or her parole or warrant status, any weapons or drug arrests, his or her acquaintances and their arrest histories, and past shooting victimization. Once identified, the police visit these individuals and inform them that they are on the heat list. The presumption is that by taking these steps the CPD will prevent shootings by providing more resources to these people. However, there is a countervailing concern that this profiling could lead to more harassment by police officers. The program is in its infancy, so it is too early to assess its effectiveness. Nevertheless, this and the preceding examples illustrate the

variety of ways police can use surveillance data to develop new crime reduction tactics.

Civil Liberties Concerns

Chicago has a long history of surveillance being abused for political purposes and violating citizens' first amendment rights. Given the sheer size and scope of the new surveillance technologies at the City's disposal, this past history has led observers to express a variety of concerns. Most local residents currently appear to support Chicago's camera surveillance activities. This is probably due to the absence of any systematic violations so far, and as well, because most Chicagoans are unaware of the breadth of the surveillance network. Nevertheless, the concern has been expressed that this concentrated power may lead to abuse if proper controls are not enacted.

Consider how long the city should keep camera footage. Most people would not be comfortable with the city keeping footage indefinitely. You might not want to be asked five years later, why had you been near the entrance of a crack house? Instead, there should be limits on how long the City retains footage that is unrelated to a criminal investigation. At present, the best guesses as to how long the City retains surveillance footage is from 72 hours to 30 days, depending upon the type of camera. Some cameras have a local DVR, while others broadcast the footage back to the CECC. Part of the rationale for the 30 days stems from the Local Records Commission in Cook County, which sets the guidelines for how long public records must be kept. It should also be pointed

out that video storage can occupy a large volume of warehouse space, so the retention of all footage for long periods of time will become very expensive.

Another risk is posed by "the camera operator with a grudge." This individual could use the surveillance capabilities of the City to stalk and harass a creditor or ex-spouse. There need to be well delineated limits on what camera operators can do, and they must be held accountable if they violate these rules. As of yet, the city does not have audit trails in place for some of these technologies. This means no one knows which camera operator viewed a camera at a certain time, or if they saved or duplicated the footage. A related issue is camera operator bias. Studies from the UK have shown that camera operators disproportionately targeted racial minorities. There are also examples of surveillance footage improperly disclosed, such as images of persons' committing suicide.

The ACLU of Illinois has been pushing for rules to safeguard camera policies (ACLU of Illinois, 2011) (Schwartz, 2013). So far, they have been unsuccessful. Under the current *modus operandi*, trust in government is the ruling principle, with the only enacted regulatory legislation directed at red light cameras.

Redux: Cameras for Traffic Offenses

Surveillance not only targets terrorists, but also minor traffic offenses. Chicago has been aggressively using surveillance technologies as a way to improve traffic safety. Two of the most notable are red light cameras and speed cameras.

Red light cameras were introduced to Chicago in 2003. The City claimed that the red light cameras would improve traffic safety. However, there was little existing research that supported this claim. Nevertheless, the City proceeded to install red light cameras delivered by the RedFlex firm. The network grew to 384 red light cameras, which made Chicago the leading city for red light cameras in the United States. Red light camera-generated motorist ticketing proved highly profitable with almost five million tickets issued since 2007, producing $500 million in revenue for the City (Brockway, 2014).

While the cameras are profitable for the city, Chicago drivers have not been pleased. The majority of issued tickets have been for right-hand turns, which pose a significantly reduced traffic safety hazard compared to a driver going straight through a red light. Over the years a number of groups including the Schaumburg Freedom Coalition, the National Motorists Association, and the ExpiredMeter blog, and even local politicians, began questioning the purpose of the cameras. My own research has determined that the introduction of the cameras did not lead to a reduction in traffic accidents (Shah, 2010). While the City that there have fewer traffic accidents, the more likely causal factor lower car usage, as opposed to the deployment of the cameras.

In 2012, the *Chicago Tribune* found that a city official had improperly received payments and various noncash gifts from Redflex, the principal red light camera operator. A few years later, a former Redflex employee disclosed that the firm routinely offered bribes to municipal officials in the quest to win contracts. These allegations led to firings and Chicago's cancellation of its contract with Redflex (Kidwell & Chase, 2014).

There was also an investigation by the Office of the Inspector General, which found that the claim that the cameras were placed at the most dangerous intersections was not supported (Office of Inspector General, 2013). Indeed, there were evidently no metrics developed to ensure cameras were placed where most needed. The program, otherwise, was not well managed. For example, the City spent $13,800 in annual maintenance for a particular set of cameras purchased at $24,500 each. The city appears to have learned from some of the mistakes with the red light cameras. The implementation of the speed cameras has been less haphazard. Cameras were specifically targeted only at schools and parks (Spielman, 2013). The fines imposed on drivers were much lower than the red light cameras. Moreover, there was a warning period, so people could learn about the cameras and adjust their behavior. The City is also promising to keep careful statistics on violations. At present, it is too early to tell whether the speed camera initiative will be more palatable than the red light cameras.

The Future of Local Police Surveillance

Surveillance is a fixture in Chicago. Since 2003, we have seen an enormous growth to over 25,000 cameras available to the city government. But cameras are only part of the surveillance arsenal. There is a myriad of other technologies, including video analytics, license plate recognition, facial recognition, red light cameras, and speed cameras. Hand in hand with these technologies is the use of new data analysis techniques, such as predictive hot spots and social networking analysis.

These capabilities raise concerns that everyone should consider. Chicago has a long, troubled history of surveillance abuse. It is essential that the CPD introduce procedures to limit abuse. After all, no one wants to repeat the mistakes of the past. The hardest question to answer is how much difference these technologies have made. The current lack of data limits our ability to answer this question. At best, surveillance appears to have a very limited effect on crime. Whether there is value in using the cameras for responding to emergencies or investigating terrorist attacks is not known. Nevertheless, these technologies are not inexpensive and may impose a cost on our freedom. It is important to consider all the dimensions of these new technologies, and decide collectively how best to conduct surveillance in a way that comports with Chicago's contemporary values.

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Bibliography:

ACLU of Illinois. (2011). Chicago's Video Surveillance Cameras: A Pervasive and Unregulated Threat to our Privacy. Chicago.

American Civil Liberties Union. (2013). You Are Being Tracked: How License Plate Readers Are Being Used to Record Americans' Movements. New York.

Brockway, M. (2014). Red-Light Camera Tickets Drop for Fifth Straight Year as Drivers Hit Brakes. *DNAinfo Chicago*.

Buchanan, A. (2003, July 30). On Chicago streets, cameras are watching. *Christian Science Monitor*.

Cameron, A., Kolodinski, E., May, H., & Williams, N. (2008). Measuring the Effects of Video Surveillance on Crime in Los Angeles: California Research Bureau.

Careless, J. (2007). Emergency Management Chicago Style. *EMS World*.

Chan, S. (2007). Why Did Crime Fall in New York City? *New York Times*. Retrieved from http://cityroom.blogs.nytimes.com/2007/08/13/why-did-crime-fall-in-new-york-city/?_php=true&_type=blogs&_r=0

Chicago Homicides Outnumber U.S. Troop Killings In Afghanistan. (2002). *Huffington Post*. http://www.huffingtonpost.com/2012/06/16/chicago-homicide-rate-wor_n_1602692.html

Chicago Police Department. (2007). Police Observation Devices (PODS). from https://portal.chicagopolice.org/portal/page/portal/ClearPath/About%20CPD/POD%20Program

Chicago voters don't mind surveillance. (2006, February 16). *UPI*. Retrieved from http://www.upi.com/Top_News/2006/02/18/Chicago-voters-dont-mind-surveillance/UPI-71851140313814/

Cullotta, K. A. (2009, February 20). Chicago Links Street Cameras to Its 911 Network. *New York Times*. Retrieved from http://www.nytimes.com/2009/02/21/us/21cameras.html?_r=0

Department, C. P. (2007). Technology Update.

Donner, F. (1990). *Protectors of Privilege: Red Squads and Police Repression in Urban America*. Berkeley, CA: University of California Press.

Gill, M., & Spriggs, A. (2005). Assessing the impact of CCTV: Home Office Research, Development and Statistics Directorate.

Gorner, J. (2013, August 21). Chicago police use 'heat list' as strategy to prevent violence. *Chicago Tribune*. Retrieved from http://articles.chicagotribune.com/2013-08-21/news/ct-met-heat-list-20130821_1_chicago-police-commander-andrew-papachristos-heat-list

Hilkevitch, J. (2013, February 9). CTA adding cameras to older rail cars. *Chicago Tribune*. Retrieved from http://articles.chicagotribune.com/2013-02-09/news/ct-met-cta-train-cameras-0210-20130210_1_rail-cars-cta-rail-twitter-jhilkevitch

Isackson, N. (2009, March). Can Cameras Replace Cops? *Chicago Magazine*.

Kidwell, D., & Chase, J. (2014, May 14). Charges filed against ex-City Hall manager of red-light camera program. *Chicago Tribune*. Retrieved from http://articles.chicagotribune.com/2014-05-14/news/chi-charges-filed-against-former-city-hall-manager-of-redlight-camera-program-20140514_1_redflex-holdings-ltd-bills-and-redflex-redflex-officials

Krauser, M. (2012, October 25). Chicago Police Testing New Gunshot-Detection Technology. *CBS Chicago*. Retrieved from http://chicago.cbslocal.com/2012/10/25/chicago-police-testing-new-gunshot-detection-technology/

La Vigne, N., Lowry S., Dwyer, A., & Markman J. (2011). Evaluating the Use of Public Surveillance Cameras for Crime Control and Prevention: Urban Institute.

Main, F. (2011, February 22). Police sensing crime before it happens. *Chicago Sun-Times*.

Main, F. (2013a, August 15). Chicago Police Go High-Tech with Facial Recognition Software. *Chicago Sun-Times*. Retrieved from http://www.suntimes.com/21268770-761/chicago-police-go-high-tech-with-facial-recognition-software.html - .U5SDURaRNuY

Main, F. (2013b, March 3). Cops on overtime help drive down murder rate in city's 'hot zones'. *Chicago Sun-Times*. Retrieved from http://www.suntimes.com/news/metro/18566138-418/cops-on-overtime-help-drive-down-murder-rate-in-citys-hot-zones.html - .U5SHSxaRNuY

Martin, A. (1996, February 27). Some 911 Calls Fail To Make It Through. *Chicago Tribune*. Retrieved from http://articles.chicagotribune.com/1996-02-27/news/9602270215_1_abandoned-matt-rodriguez-problem

Mihalopoulos, D. (2009, June 9). 'Red Squad' decrees: Federal judge dissolves restrictions linked to Chicago police's 'Red Squad'. *Chicago Tribune*. Retrieved from http://articles.chicagotribune.com/2009-06-09/news/0906080419_1_dissolves-red-squad-chicago-police

Moser, W. (2013, December 9). The Small Social Networks at the Heart of Chicago Violence. *Chicago Magazine*.

Office of Inspector General, C. o. C. (2013). Red-Light Camera Audit.

Papachristos, A. V., Anthony Braga, and David Hureau. (2013). The Corner and the Crew: The Influence of Geography and Social Networks on Gang Violence. *American Sociological Review, 78*(3), 417-447. doi: 10.1177/0003122413486800

Ratcliffe, J. (2006). Video Surveillance of Public Places: Office of Community Oriented Policing Services, U.S. Department of Justice.

. Red Squad. (2004) *Electronic Encyclopedia of Chicago*: Chicago Historical Society.

Schwartz, A. (2013). Chicago's Video Surveillance Cameras: A Pervasive and Poorly Regulated Threat to Our Privacy. *Northwestern Journal of Technology & Intellectual Property*, *11*(2), 47-60.

Shah, R. (2010). Effectiveness of Red Light Cameras in Chicago: An Exploratory Analysis. http://eyeingchicago.com/red-light-camera-study/

Shah, R., & Braithwaite, J. (2013). Spread Too Thin: Analyzing the Effectiveness of the Chicago Camera Network on Crime. *Police Practice and Research: An International Journal*, *14*(5), 415-427. doi: 10.1080/15614263.2012.670031

Skogan, W. G. (2002). *Taking Stock: Community Policing in Chicago*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, National Institute of Justice.

Skogan, W. G. (2007). *Reflections on Declining Crime in Chicago*. Retrieved from http://skogan.org/files/Skogan.Crime_Drop_in_Chicago.April_2007.pdf

Smile, you're on the street sweeper cam. (2008, July 10). *Chicago Tribune*. Retrieved from http://articles.chicagotribune.com/2008-07-10/news/0807100561_1_sweepers-street-sweeping-days-mayor-daley

Spielman, F. (2006, October 12). Daley: By 2016, cameras on 'almost every block'. *Chicago Sun-Times*. Retrieved from http://www.highbeam.com/doc/1P2-1643739.html

Spielman, F. (2008, March 6). Daley unveils plans to increase school security. *Chicago Sun-Times*.

Spielman, F. (2013, June 22). Speed-camera tickets coming in September. *Chicago Sun-Times*. Retrieved from http://www.suntimes.com/news/metro/20885934-418/mayors-speed-cameras-planned-for-august.html - .U5SRshaRNuY

Theodore, N., Martin, N., & Hollon, R. (2006). Securing the City: Emerging Markets in the Private Provision of Security Services in Chicago. *Social Justice, 33*(3), 85-100s.

Warrick, J., Finn, P., & Nakashima, E. (2010, May 4). Times Square bombing attempt reveals limits of video surveillance. *Washington Post*. Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2010/05/03/AR2010050304522.html?sid=ST2010050201717

Washburn, G. (2006, February 18). City Sold on Video Security. *Chicago Tribune*. Retrieved from http://articles.chicagotribune.com/2006-02-18/news/0602180122_1_cameras-high-crime-areas-video-security