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CCTV - *The Wave of the Future*

OLD SCHOOL

On April 9, 2003, Beverly Hills School Resource Officer Jeff Sweet was contacted by a playground aide regarding a suspicious vehicle seen on numerous occasions cruising and loitering in the area of the school. A follow up investigation by detectives revealed that the driver of the vehicle was a registered sex offender with an extensive history of criminal conduct. Unfortunately, the observation of the suspect by the school aide was not sufficient for purposes of prosecution. In order to gain sufficient evidence for prosecution, the detectives conducted a weeklong, 24 hour a day surveillance (overtime, etc.) of the suspect. Ultimately the investigation led to the suspect's arrest and prosecution. Unfortunately, the investigation cost the City of Beverly Hills hundreds of hours of overtime.

New School

On February 10, 2010, Closed Circuit TV's (CCTV) are placed around all public schools in the City as well as streets and other businesses. The cameras constantly monitor and record every vehicle and pedestrian passing near the schools. At about 2:30 that afternoon, cameras with advanced software notify CCTV specialists at the station that a vehicle has parked near Sunrise elementary school. The software has detected the occupant has remained in the vehicle near the playground for more than 10 minutes, and that no one has entered or left it. A quick check of The AVL (Automatic Vehicle License Plate) system indicates this vehicle's license plate has been recorded by CCTV passing by a number of the City's elementary schools; moreover, it appears to have circled two of the schools repeatedly this afternoon. Officer Johnson begins monitoring the suspect while another officer is dispatched. Johnson continues to record the suspect intently watching the children as they leave school. A minute later, Johnson switches cameras and records the suspect as he moves his car around the corner after two children pass by.

The information is relayed to the responding officer, who arrives on scene in time to see the suspect attempting to

engage the children in conversation. The officer contacts the suspect and begins his investigation. A computer check of the suspect indicates he is a sex registrant on active parole. Ultimately, with a little additional investigation, the suspect is placed in custody and ultimately prosecuted due to the substantial video evidence immediately available. In less than an hour, CCTV and two diligent police officers completed the same basic arrest scenario as the 2003 case with a savings of hundreds of work hours and thousands of dollars. The 2003 case was real; the arrest in 2010 will be if the community makes the investment in CCTV technology readily available today.

You might be thinking 'Yeah that may be great in Beverly Hills, but my City can't afford a CCTV system'. If so, read on!

The Past

Over the past ten years, incredible technological advancements have transformed CCTV from the original copper wire systems into the inexpensive modern wireless systems sold to homeowners at local retail stores. These systems can now be viewed from anywhere in the world over the World Wide Web. For government entities and businesses, this

means it is no longer necessary to tear up walls or dig up pavement in order to hardwire the camera to the system. Due to the decreased costs and documented benefits of CCTV, businesses in the United States have continued to expand their use of CCTV.¹

In 1991, the Society for Human Resource Management conducted a survey that reported only 11 percent of businesses used cameras to monitor store activity. By 1995, the Security Industry Association estimated that United States businesses were spending one billion dollars a year on security camera systems. In fact, according to a recent RNCOS (Research and Consulting Outsourcing Service) Corporation² report, video surveillance expenditures are expected to grow from 1.3 billion in 2003 to 7.4 billion dollars globally in 2007.³ On the surface, one billion dollars is a tremendous amount of money; however, when compared to the cost of stolen merchandise and lost productivity prior to the advent of CCTV, it became apparent to corporate managers everywhere that CCTV was a viable and economic solution. In 1995, Pinkerton estimated

¹ According to SecuritySales.com, CCTV installations per dealer increased from 25 a year in 1995 to 132 per year in 2004 and now account for 24% of all security business revenue.

² RNCOS is a market research firm focused on data collection in numerous industries.

³ Accessed on line at Researchconnect.com, CCTV report 7919 by Maheshwari, Shushmui, October 11, 2005

that \$15 - \$25 billion a year was lost to employee theft. Additionally, businesses "began to see" the cameras also reduced absenteeism, late arrivals, early departures, and other inappropriate activities which had accounted for nearly \$150 billion in lost productivity.⁴ By 2001, The Security Industry Association reported another benefit for CCTV. According to a JP Freeman Corporation⁵ study, CCTV had become the top risk reduction technology for their members.⁶ Freeman also discovered that in addition to security and personnel benefits, CCTV systems substantially reduced lawsuits, thus saving businesses even more money than from property losses.⁷

These economic incentives have now made video cameras so prevalent, it is estimated the average U.S. worker in a major city is observed by cameras about 70 times a day. Interestingly, due to the higher level of CCTV market maturity, the average United Kingdom resident will be viewed by video systems 250 to 300 times a day.⁸ Just as the reported benefits of CCTV caused a dramatic rise in their

⁴ Wired Magazine "You're Not Paranoid: They Really Are Watching You", page 2, Issue 3.03, March 1995

⁵ Security industry market research firm based in Connecticut

⁶ Security Industry Association report (May 16, 2005), accessed on the internet at "SIAonline.org"

⁷ Security Industry Association report (May 16, 2005), accessed on the internet at "SIAonline.org"

⁸ Crismon, Dave, (May 17, 2005), VUZ video systems, interviewed May 17, 2005.

use in the private sector, it also began driving an expansion in the public sector as well.

Honolulu, Hawaii, utilizes live web cameras, operating 24 hours a day as a public relations and traffic management tool. Their video system allows anyone to see Honolulu's most notable beaches live, or monitor street traffic from anywhere in the world, by simply going to their internet website <http://www.co.honolulu.hi.us/cameras/index.htm> and clicking on the particular area they are interested in viewing.

In fact, "city cams" are becoming so commonplace around the country that a Google search of the term returns more than 3 million returns for cameras located in major cities, cruise ships and even animal cams.⁹ The prevalence of cameras in our society has not been lost on law enforcement.

Retired FBI agent Jim Norman, who led the investigation on the Oklahoma City bombing said the first thing federal investigators now do at the scene of a crime is to gather all of the video footage from every camera located around a

⁹ Google Search (May 23, 2005), an internet search indicated 3,880,000 returns for "city cams."

crime scene. Often, there are so many cameras peripheral to any given locale; agents have literally dozens of tapes to check in their search for footage of the crime.

With the improvement in technology, even more security uses are becoming feasible. Video applications that were not possible a decade ago are now becoming routine. Thousands of parents use "nanny cams" to watch their children and their child's nanny while they are at work. Homeowners purchase inexpensive cameras to watch their front door and monitor them from their television set.

In Afghanistan and Iraq, "camera traps" are being utilized by U.S. forces to stop the flow of militants into each country.¹⁰ These cameras instantly take photographs of people crossing their path, which allows the military to immediately respond when a militant is spotted. When the system was first deployed, 100 militants a day crossed their path. Now that the word is out, less than 10 people a day even attempt to pass through surreptitious entry points.¹¹

¹⁰ Smart, John, President Accelerating Change Corp, from a lecture at Command College on April 15, 2005.

¹¹ Smart, John, President Accelerating Change Corp, from a lecture at Command College on April 15, 2005.

Video monitoring technology has been embraced by law enforcement around the world for a number of years for many of the same reasons as private industry. In South Africa, downtown Pretoria became one of the safest locations in the country thanks to the use of CCTV.¹² In Johannesburg, a pilot project involving 150 cameras was implemented in April of 2000 in the Central Business District.¹³ Those cameras are still in use and are credited with reducing the crime rate by 80 percent in an approximately two year period.¹⁴

The United Kingdom was one of the earliest law enforcement adapters of this technology. The U.K. currently has over 250,000 cameras in place and public monitoring has become an accepted part of life.¹⁵ The trend began over a decade ago in the City of King's Lynn, where sixty remote controlled video cameras were installed by the police department to monitor problem areas. The resulting decrease in street crime exceeded all of their expectations. In the areas covered by the cameras, violent

¹² Smart, John, (April 15, 2005) from a lecture at Command College on April 15, 2005.

¹³ Davie, Lucille (August 23, 2002), "A clean and safe surprise in downtown", City of Johannesburg Official website, accessed via the internet, May 24, 2005.

¹⁴ Cueincident Ltd. South Africa's "Top 300 National Companies", Value Proposition accessed on line May 17, 2005, <http://www.top300.co.za>.

¹⁵ Davis, Jackson and Schwabe, "Challenges and Choices for Crime Fighting Technology", page 15, Rand Publishing, 2001

street crime dropped to 1/70th of the previous levels.¹⁶ "Burglary and vandalism in the industrial estate has dropped to a tiny fraction of its original level. Crime in car parks has dropped by ninety percent. People say they feel safer. Indeed they should."¹⁷ In addition, just as businesses realized additional economic benefits, so did law enforcement. The City of King's Lynn not only reduced crime, they began to reap financial rewards from lowered patrol costs that actually recouped the entire cost of the system in a few short months.¹⁸

After seeing the outstanding results that were achieved in King's Lynn, agencies all over the United Kingdom began implementing video surveillance systems and achieved the same sort of results. Airdrie, Scotland, experienced a significant drop in crime and an increase in clearances after a video system was installed. Police officials in Airdrie reported that in the 24 months following the 1992 introduction of CCTV, crime across the board was down 21 percent in the areas covered by the system and clearances were up 16 percent. The officials noted that the system was especially successful in reducing property crimes (by

¹⁶ Brin, David "The Transparent Society", Chapter one, copyright 1998.

¹⁷ CCTV Frequently Asked Questions, <http://www.privacyinternational.org/article> , Internet accessed February 7, 2006

¹⁸ Brin, David "The Transparent Society", Chapter one, copyright 1998.

48 percent).¹⁹ Newcastle utilized their system to apprehend 1500 suspects including rowdy soccer fans that rampaged through downtown streets.²⁰ Outside of the UK, Singapore utilizes video cameras mounted on "buses, traffic lights, lampposts, overpasses, electronic gantries, and buildings," to form "the eyes of the surveillance network."²¹ Their surveillance system is used for both law enforcement and traffic management.

The reduced costs of wireless video technology coupled with an understanding of its value and reasonable price has led to an explosion of use by police agencies in the United States over the last five years. In fact, they are so popular now, (and cheap) even big box stores such as Costco are selling state of the art wireless multi-camera digital CCTV systems with remote web access for under \$800.²² These readily available high quality systems have enabled law enforcement agencies to locate and identify terrorists, criminals, missing persons, issue citations, secure borders, protect sensitive locations and provide a sense of safety to the public. The beauty of this technology is

¹⁹ Scottish Office of Criminal Justice, research findings No. 8, 1995
<http://www.scotland.gov.uk/cru/resfnds/crf08-00.htm> , Internet accessed on January 31, 2006.

²⁰ Brin, David <http://www.davidbrin.com> , page 3, Internet accessed on April 27, 2005.

²¹ Baum, Dan and Schmidt, Sarah <http://www.wired.com> , "Singapore", Wired Magazine, Issue 9.11, November 2001. Internet accessed on May 24, 2005.

²² Costco Q-see 4 channel internet monitoring system with DVR, Internet accessed on January, 31, 2005.

that it is inexpensive, easy to install and operate, and has so many valuable law enforcement uses.

According to the Security Industry Association, 'Closed Circuit Television (CCTV) is proving to be an effective tool to deter crime and apprehending criminals in cities across the United States. Successful implementation of video surveillance has been documented in numerous places around the country (Anchorage, AK; Baltimore, MD; Boston, MA; Camden, NJ; Dover, NJ; Garfield, NJ; Tacoma, WA; Tampa, FL; and Virginia Beach, VA to name just a few).²³ One typical example is a recent Los Angeles Police Department case where a robbery suspect's image was recorded by a CCTV system. The following LAPD press release aptly demonstrates the benefits of CCTV:

Los Angeles: An anonymous tip led to the arrest of the man seen dragging the Ace Alarm Company's worker by her hair in a surveillance video from April 7, 2005.

Detective Gilbert Alonso credited the public and the media in solving this case. After leads were exhausted, Detective Alonso took his case to the public. Surveillance footage was aired on April 25, 2005, showing the brazen robbery tormenting his victim by choking her and dragging her by her hair through the office.

The footage clearly showed the suspect. Within a week, detectives received an anonymous tip through the "We Tip" hotline that their suspect was Dimetrious Campbell, a 31-year-old employee of a San Fernando Valley thrift store.

Campbell had a prior criminal record and had an outstanding arrest warrant. After matching Campbell's parole picture to the surveillance footage, detectives knew they had the right man. On May 2, 2005, detectives arrested Campbell on the warrant at his job in Panorama City.

²³ Security Industry Association White Paper "U.S. Cities and Towns Benefit From Video Surveillance In Public Places", accessed via the internet May 31, 2005 at "sionline.org"

They conducted a search of his home and seized clothing matching that worn by the suspect in the surveillance footage. Campbell was later booked on a charge of Kidnap for Robbery.

"Getting the images out there for the public to see made all the difference in this case," said Detective Alonso. "We really appreciated the assistance."

The original robbery occurred on April 7, 2005, at 5:10 AM, at the Ace Alarm Company. It is located at 1914 W. 8th Street, Los Angeles. Kidnapping became part of the crime elements because the suspect forced the victim's movement outside the business. The victim sustained a cut lip, bloody nose, and swelling to her face.²⁴

In this and other instances, law enforcement even benefits from the CCTV expenditures of others despite little involvement or coordination by the police. Another example of this trend was documented in Huntsville Alabama. In 1995, cameras were installed in over 40 schools. Many of these schools had been plagued with assaults and burglaries. Within two years, burglaries had dropped from over 100 to approximately 5 in a year. In fact, the reduction in crime and property loss was so phenomenal that their insurance premiums dropped by over a half million dollars a year!²⁵ Moreover, their apprehension rate increased dramatically to 99 percent.²⁶ Obviously, law enforcement directly benefits from every drop in reported crime or increase in arrests. It also benefits from the corresponding reduction in calls for service. In the case of Huntsville, since the school district monitors the

²⁴ LAPD May 3, 2005 Press Release.

²⁵ Begley, Sharon "Security Camera use is deterring Crime," USA Today, page 4, 1997

²⁶ Security Industry Association White Paper "U.S. Cities and Towns Benefit From Video Surveillance In Public Places", accessed via the internet May 31, 2005 at "sionline.org"

cameras, responding officers would also be able to receive valuable, up-to-the-minute tactical intelligence from inside the school should a "Columbine" type incident occur. All of that information is available to the police for free!

The Present

Most of the current CCTV systems in use by law enforcement are purchased for the primary use of being installed outdoors to reduce crime in a specific public area. An excellent example of this strategy in action was reported in *Wired* magazine in May 2005:

On a warm afternoon on Chicago's West Side... a young man leans against the wall of a liquor store at the corner of Chicago Avenue and Homan Street. His puffy black jacket is so oversized that the collar hangs halfway down his back. Thirty feet up, a camera mounted on a telephone pole swivels toward him. Three miles away. . . Ron Huberman watches the young man on a PC screen. "You see that guy?" asks Huberman, the 33-year-old chief of Chicago's Office of Emergency Management and Communications. "He's pitching dope-you can tell."

With a move of his mouse, Huberman pans to the right. We're looking down at a second man, in a beige coat. He has a wad of cash in one hand and a brown paper bag in the other. "He's involved," Huberman says. No cop, even undercover, could ever get this close for this long. But the cameras- housed in checkerboard-patterned, 2 foot tall boxes the police call pods- can zoom in so tight I can see the wisps of a mustache.²⁷

Once a criminal act is established, the camera operator immediately sends in officers to arrest the perpetrators and direct the recovery of any evidence that the suspect attempts to hide or discard. In the future, Chicago's system will do more than just watch a location.

Chicago is in the process of working on an eventual 2,250 camera system that is intended to push their "crime fighting" ability firmly into the 21st century. The camera system is only a part of a new computerized database system that attempts to tie together every bit of Chicago PD's knowledge base into one system. Eventually, facial

²⁷ Shachtman, Noah, "Spycam Force", page one, Wired Magazine Issue 13.05, May 2005 accessed online May 17, 2005.

recognition technology will be incorporated, and visible tattoos and other known factors will be searched in the computer database while the suspect is under surveillance. In addition, the cameras themselves will be able to notify human monitors of suspicious activity the viewer may have missed. Eventually, the cameras will be able to identify someone walking erratically, loitering, dropping a package and leaving or even alert officers to the sound of a gunshot. In each instance, the software built into the cameras will analyze the situation and notify the operator of the activity.²⁸ The Chicago Police Department is currently evaluating wireless technologies for their expanding video network; however, when a system goes wireless, additional safety precautions must be taken to avoid disruption and hacking.

According to John Powell, a consulting engineer with the Department of Homeland Security, most of today's wireless systems utilize the unlicensed communications spectrum because that provides enough bandwidth to transmit video.²⁹ Someone could, therefore, intentionally or unintentionally

²⁸Douglas, Merrill, "City that works now the city that spys", page 24, Mobile Radio Technology, February 2005.

²⁹ Much of the communications spectrum is licensed; however, the Government has set aside certain portions (such as 5.8 Ghz) for low power devices such as Wi-Fi computers and cordless telephones to operate on where there power output of the device is low so as to not transmit for great distances.

disrupt transmission of the wireless signal. Powell added that with a few dozen PDA's, he could disable all of the wireless access points in the unlicensed communication bands in Chicago with a "denial of service attack"³⁰ thus rendering even the police system inoperable. Fortunately, a prepared organization can overcome this weakness through high-end equipment utilizing modern encryption technology.

The Washington D.C. Police Department began implementing a CCTV system shortly before the terrorist attack on "9-11". In fact, the first activation of their Joint Operations Command Center was on the day of the attacks. The JOCC was still being completed when the first airplane hit one of the twin towers. Today the JOCC monitors approximately 30 Metropolitan Police CCTV cameras and numerous other systems in the district. According to Chief of Police Charles Ramsey, "we didn't see a need to re-create the wheel. There are video cameras just about everywhere you can imagine in the city, so the goal was just simply to tie into those existing systems."³¹ Currently, the system includes "a wall" of video screens that monitors video cameras and live radar feeds from Reagan National Airport.

³⁰ Douglas, Merrill, "City that works now the city that spys," page 24, Mobile Radio Technology magazine, February 2005.

³¹ Ackerman, Robert K., "Washington Police Take Command to the Next Level," page 20, Signal Magazine, February 2005.

Closer to home, the Los Angeles Police Department piloted the use of CCTV around McArthur Park in 2004 to proactively suppress crime and protect business. In the first year of operation, the system produced over 600 arrests, a dramatic reduction in crime along with a dramatic increase in the use of the park by local residents. This pilot has led to three additional projects, all of which have yielded a large number of arrests and a reduction in criminal activity.³² In addition to increased arrests and decreased crime, the video evidence has also led to a 100 percent conviction rate and reduced trial expenditures due to suspects pleading guilty.³³

In 2001, the Seal Beach Police Department began operating ATIP, (the "Alarm Triggered Internet Protocol") partnering the Police Department and local businesses already equipped with CCTV. Using leading edge encryption technology, police units receive real-time video feeds from within a business whose robbery or trouble alarm has been activated.³⁴ The

³² Boone, Charlie (May 16, 2005) Hamilton Pacific employee stated in an interview for this project on May 16, 2005.

³³ Boone, Charlie (May 16, 2005) Hamilton Pacific employee stated in an interview for this project on May 16, 2005.

³⁴ Zanone, Dean "Force Protection Using Wireless Technology," IACP Police Chief Magazine, page 30, December 2001

system, funded by the businesses and two firms interested in developing such technology (Cisco Systems and Quecore Integration Systems) saw great success during the time it was in place.

Through ATIP, Seal Beach was able to provide better service to their community with very little increase in expenditures. According to Sergeant Ron Labelle, the system was a "force multiplier" and allowed police officers to do more with less. Labelle gave the example of an officer responding to the local Target store and being able to not only see the side of the store they arrived at, but being able to view the opposite side of the location as well. The wireless video system on the opposite side of the location would send a video feed directly to the police car's video monitor, which allowed one officer to simultaneously visually cover two sides of the location³⁵. The system also allowed officers responding to a bank robbery to be able to monitor the inside of a bank from outside the building on their police vehicles computer system. At the end of the test period, Seal Beach was not able to continue the program due to staffing changes, and the financial obligation to sustain the program;

³⁵ Labelle, Ron, Seal Beach Police Department, from a telephone interview on April 21, 2005.

nevertheless, it was an excellent example of what can be accomplished with this technology.

RECOMMENDATIONS

While utilizing CCTV to aid in the prevention of crime and capture of criminals will not happen overnight, success here and abroad indicate it should be a centerpiece to the strategies of policing agencies across the nation. The research clearly indicates the law enforcement paradigm is changing and the decision is no longer whether to utilize CCTV in law enforcement, but rather, *what type of system* an agency wishes to provide.

It is clear that CCTV allows agencies to do more with less. Agencies with CCTV coverage will not need to do random patrol in hopes of "getting lucky" and spotting a criminal. CCTV agencies can respond while the suspect is at the location and apprehend him immediately, then use the tape to obtain a conviction. Should the suspect avoid immediate capture, CCTV evidence will aid in the suspect's speedy capture as it did in the London bombings earlier this

year.³⁶ Moreover, this reliable evidence leads to increased guilty pleas and reduced court costs. Even better, the mere presence of CCTV reduces the amount of crime, which reduces calls for service and enhances the quality of life in every neighborhood where CCTV is installed. The clear recommendation is that the more robust system a city can afford, the more likely crime will drop while conviction rates increase.

In conclusion, CCTV appears to be the first wave in the application of common everyday technology in the fight against crime. Furthermore, when combined with private sector camera systems already in place, the police have yet another opportunity to interact with the public to build bridges and work together for the greater good. Agencies should start looking at this force multiplier technology now, because in the very near future, it will be an expected everyday part of policing.

³⁶CNN story, July 22, 2005 <http://www.cnn.com/2005/WORLD/europe/07/22/london.tube/index.html> , Internet accessed on January 31, 2006.