A PROMISE OF TECHNOLOGY
WHY POLICE CARS WILL NEVER FLY

by

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The Command College Futures Study Project is a FUTURES study of a particular emerging issue of relevance to law enforcement. Its purpose is NOT to predict the future; rather, to project a variety of possible scenarios useful for strategic planning in anticipation of the emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past, because it has not yet happened. In this article, methodologies have been used to discern useful alternatives to enhance the success of planners and leaders in their response to a range of possible future environments.

Managing the future means influencing it—creating, constraining and adapting to emerging trends and events in a way that optimizes the opportunities and minimizes the threats of relevance to the profession.

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WHY POLICE CARS WILL NEVER FLY

In the sixties we were promised that flying cars would alleviate traffic congestion with emerging technology. Not just airborne automobiles, but a vehicle the average person could fly for their daily commute. A half-century later we are still stuck on terra firma in gridlocked traffic. So what happened to the promise of flying car technology? The truth is we have no need for it. We have a freeway system in place that is simple, affordable and efficient which allows the average person to commute.

The hassle of traffic congestion does not yet justify the intense complexity of flying cars. Somehow the idea of the flying car, and all the potential it held, missed the target. There is a lesson here for law enforcement leaders of the future. The future of technology promises to make countless types of new devices, capabilities and opportunities available to the police. One area where new technology holds great potential is in the area of electronic surveillance capabilities. When considering these technologies, though, we need to ask if these options truly fit our future needs, and if so, should we always take advantage of it?

The perfect storm is brewing that involves emerging technology, police surveillance and privacy rights. Like dark clouds, all three issues are being seeded by consumer demand for ever more technology. There is a certain irony that this advanced technology is consumer driven by the very people who will argue the technology is being used against them. Law enforcement would do well to pay attention to this phenomenon and plan for it within their respective communities. This is not just regarding its

implementation, but also to determine which technology would fit the mission of the agency.

TECHNOLOGY

Emerging technology represents ideas and theories that are in phases of development and experimentation, maybe still only in the discussion stages. In particular, the technology driving communication devices has created an environment of user convenience enabling immediate information sharing. The ramifications of this technology on police surveillance are mind boggling. Take, for example, some of the surveillance related technology that is currently in the development stages.

You Dirty Digital Rat You

DARPA, the Defense Advanced Research Projects Agency, has been at the forefront of micro surveillance research.[1] Bio mimicry robots that are capable of real time surveillance will soon be available to local law enforcement. The concept here is to create a surveillance robot that mimics a live creature, such as a bird or small animal like a rat. DARPA has done just that with a lifelike hummingbird robot capable of transmitting live video imaging. The micro robot even flies like a hummingbird and is remotely controlled by an operator who watches video images on a monitor.[2] Imagine the possibilities in a tactical incident if we have the ability to send in a surveillance robot that mimics a bird or a rat.

During a critical incident, the Incident Commander could deploy a robotic bird UAV to conduct overhead surveillance that would relay live video to the command post. Because the robot mimics a bird, any potential suspects may not recognize it as a threat and would likely not hide from it as they would from a police helicopter hovering

overhead. If the device has the ability to perch, the surveillance could be conducted from a nearby tree branch or even the window sill of the very building the suspect is in. And instead of relying on SWAT to position cameras on the suspect, you could simply send the robotic rat in to provide you with live streaming video and audio of the suspects.

These devices have a place in police surveillance when we know where the suspects may be, but if the surveillance area is large, we would fall back on traditional aerial support. The future of surveillance will need something on a much larger scale.

Earth Googled

There will come a time when most police agencies will be able to access shared low orbit satellite or space craft imagery of the earth's surface. NASA has successfully orbited a small shuttle in low orbit for the Air Force.[3] This technology trumps satellites because the shuttle can be directed to any position around the globe at will. Coupled with pinpoint Global Positioning System (GPS) coordinates, the one-to-one scale images will be real-time, enabling the users to conduct aerial surveillance around the clock.[4] This technology could become as common as the traffic cameras currently operated by many agencies, if the military shares this technology.

Think for a moment how much might change. For instance, current airborne units could be abandoned because of the capability to monitor and report on any occurrence almost instantly with accompanying video. In a critical incident such as a school shooting, the pinpoint system could track suspects, help direct responding officers and even evacuate children away from danger. Of course, all the camera surveillance in the world is worthless unless there is someone to monitor the images.

An App For That

DARPA is working to solve the issue of monitoring surveillance devices with project Mind's Eye, which explores the possibility of artificial intelligence (AI) monitoring images.[5] The technology will focus on AI learning new spatiotemporal concepts, enabling computers to key in on visual cues as a human would in similar circumstances.

This type of automated surveillance has unlimited potential for law enforcement. Cameras mounted in public areas could be monitored around the clock by computers that would pick up on visual cues programmed by the user. These are the same visual cues a human uses to spot a hand-to-hand drug transaction or a weapon or a fight. The camera would adjust and zoom while recording all of the actions. Alarms would notify field officers as the real time images appear on the officer's car computers.

This technology could usher in a new era of automated public surveillance by combining it with current technology used for license plate reading computers. Imagine the potential to track a suspected terrorist by vehicle license plate or description and having an automated system follow the vehicle through a network of cameras. Or, imagine this automated system keying in on a suspicious rental truck being parked and abandoned near a school and automatically sending an alert to notify police as soon as it occurs.

The last and potentially most controversial piece to this surveillance plan would be the addition of facial recognition. The technology currently exists to digitally identify a person from stored data images. What could the future have in store for facial recognition technology?

Face Booked

Facial recognition technology is about to take a giant leap towards the ultimate prize in police surveillance. Commercial advertising has taken the next step in using facial recognition to identify people in public areas as was portrayed in the movie Minority Report. Stored personal data will be used to address individuals identified by Radio Frequency Identification Devices (RFID) in their cell phones and credit cards.[6] This ultimate form of public surveillance technology may soon be available to police. When this technology fully develops, we will not be able to go out in public without being traceable.[7] Combined with GPS, RFID technology will allow a user track a person in real time from any wireless device. Although advancements in technology have always had an impact on police operations in general, the implications for police surveillance are staggering.

SURVEILLANCE

The relationship between technology and police surveillance has a long history and deserves a little review. Police surveillance is a sensitive subject for most Americans. For a society that prides itself on human rights, in particular privacy rights, "spying" on members of our community can be a touchy issue. The courts have given us some direction when in comes to using technology to conduct surveillance.

When Things Were Black and White

An important example of technology based surveillance occurred in 1967 when New York officers planted listening devices in an attorney's office. In *Berger V. New York (1967)* the court chastised police for going on a "fishing expedition" because the attorney was not the focus of a criminal investigation.[8] The police bugged the attorney's

office and listened to all of his conversations for over two months. That use of technology might seem extreme to us now, but in 1967 with no real parameters to work within, it probably seemed like a good idea. A year later Congress sought to define the proper use of electronic surveillance with *Title III of the Omnibus Crime Control And Safe Streets Act of 1968,*[9] establishing parameters for the police when conducting wiretap surveillance.

In Living Color

Understandably, back in 1968 video surveillance was not an issue and was not addressed until 1984.[10] By then, technology enabled the use of video recording devices to capture criminal acts. In *United States vs. Torres*, federal agents used hidden television cameras to film terrorists making bombs in their apartment. The court decided that if only the video recording was used, and not the audio, it did not violate the Omnibus Act.[11] Of course these criminals were the focus of an on going investigation.

With the appropriate court order, current technology would allow those agents to view live streaming video images over the internet via strategically placed web cams. The parameters are the same despite the newer technology. However, what if there was no ongoing investigation? No focus other than a public area that police wished to monitor for reasons of public safety? Other countries have taken a more active approach to public surveillance with the use of closed circuit television camera systems. While generally the domain of European countries, public surveillance cameras are appearing in the US.

Horse of a Different Color

General surveillance cameras in public areas have been common in Europe for some time. In the U.K. cameras with pan and zoom capabilities are currently watching over city streets, highways and squares scanning for criminal behavior.[12] The US is rapidly adopting surveillance cameras that monitor similar public areas in major cities such as Washington DC, New York and Chicago. [13] The prevailing legal principle regarding these cameras parallels the tradition of the plain view rule. If the camera is mounted in a public area, the images are no different than the view of an agent who has a legal right to be in that location. Under this philosophy, there is no Fourth Amendment violation. Conversations overheard in public areas also have no expectation of privacy and therefore no protection under the Fourth Amendment. This applies to conversations heard unaided by any device that would enhance or amplify sound. Generally, if you do something in public, there is no expectation of privacy. Of course there is a new paradigm of public that is taking place on line.

True Color 32 BIT

Social media is already challenging law enforcement surveillance as police venture into cyber space to monitor criminal activity. MySpace, FaceBook, Twitter and Internet chat rooms are full of potential intelligence information.[14] Under the Patriot Act, the National Security Agency can bypass the requirements of the Foreign Intelligence Surveillance Act to monitor all fiber-optic communication from foreign countries without a warrant.[15] This includes phone conversations, e-mails and web browsing originating outside the US. If these communications are reciprocated by a US user, though, all information is accessible by the agency. This means an American citizen can be subject

to electronic surveillance if they respond to a foreign e-mail. What is not clear is if a US citizen logs onto a foreign website that is a target of the NSA. Does that open the door to conduct surveillance on the US side under the Patriot Act? If you choose to examine a website that supports terrorist ideals, should you expect that all of your subsequent web searches will be monitored by the NSA? Does US society prize privacy over security and at what point would we surrender it? Interestingly, the messages are mixed.

PRIVACY RIGHTS

The First and Fourth Amendments allow us to speak freely and to have a reasonable expectation of privacy in our daily lives. These Amendments to our Constitution ensure these as rights and we do not take them lightly. This is why every police leader should pay particular attention when ever these issues are raised. What may appear to be an acceptable emerging trend in police surveillance could mark the beginning of a wave of public push back. Two areas in particular are possible indicators of the edges of public acceptance. As we consider what surveillance technologies to employ, they can be a useful benchmark.

No Green Light for Red Lights

Over the last decade it appeared as if automated police surveillance might gain acceptance through the use of red light camera systems. Favorable court decisions regarding the use of camera systems for red light and speed enforcement painted a positive picture for automated enforcement technology. Recently, however, public push back against such technology appears to be gaining ground.[16] As city governments weigh the positive versus negative aspects of red light camera systems, others are doing the same for speed enforcement cameras. Arizona ended its use of speed enforcement

cameras in 2010 despite data that showed the systems reduced fatal collisions.[17] Even now, members of advocacy groups are pushing for a statewide ballet measure banning the cameras.

Not So Friendly Skies

Even the much publicized introduction of body scanner technology in large airports has generated public concerns that the technology invades personal privacy.[18] Here the push back involves the flight crew community as well as passengers whose safety is the essential reason for the scanners. Who can forget the images John Tyner provided on You Tube when he refused to go through a full body scanner and subsequent pat down at San Diego Lindberg Field in 2010.[19] His cell phone video of the altercation went viral and he was viewed by many as an online advocate for privacy rights.

A PROMISE KEPT

The intention of this article is not to highlight emerging surveillance technology or to dwell on court decisions regarding privacy rights. The message is to anticipate that our future will be impacted by the incredible growth we are witnessing in technology. The impact will be felt in our all aspects of our profession, from hiring and training officers to policing our communities. The truth is we cannot accurately plan for any specific evolution of technology. We can however, monitor trends and use this information to predict where technology may lead us. There is no cook book approach for future impact other than to be aware the target is always moving and we run the risk of missing the mark completely.

Imagine now our mythical flying car; that promise of technology made so many years ago. Let’s say a company obtains FAA certification for a craft, one with folding

wings that is capable of driving on roadways.[20] It appears that the promise of technology has nearly been fulfilled. Imagine now, the police agency which views this advance as being a superior means to patrol their community. As with many other well intended, but flawed acquisition decisions, the agency dives in to get the "newest thing" before anyone else. The company supplying the flying cars is eager to enter the market, and they help write a federal grant for the agency to obtain them. Of course, the hidden costs and logistical issues only then become apparent.

Metaphorically, flying cars represent the impact of emerging technology and how we may miss the future target if we fixate on our limited view of current needs. We run the risk of buying today's technology to address tomorrow's issues, and also of enhancing our capacity in a way that may result in "push-back" from our communities. Although the potential to help improve our ability to monitor, respond and assist those in need may be easier by the day, we want to ensure we don't use the "flying car" yardstick against which to measure our choices

Notes:

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[1] DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research bridging the gap between fundamental discoveries and their military use. http://www.darpa.mil/About.aspx

[2] DARPA's Nano-Hummingbird Spy Drone Can Fly For Eight Minutes And Perch On Your Sill by Dan Nosowitz, Popular Science, February 17,2011http://www.popsci.com/technology/article/2011-02/video-darpas-nano-hummingbird-spy-drone-action

[3] X-37B unmanned space plane returns to Earth, Christian Science Monitor, CSMonitor .com February 21, 2011. http://www.csmonitor.com/layout/set/print/content/view/print/347306

[4] The **Global Positioning System** (**GPS**) is a space-based global navigation satellite system (GNSS) that provides reliable location and time information in all weather and at all times and anywhere on or near the Earth when and where there is an unobstructed line of sight to four or more GPS satellites. It is maintained by the United States government and is freely accessible by anyone with a GPS receiver. http://www.en.wikipedia.org/wiki/Gps

[5] DARPA Kicks Off Mind's Eye Program, DARPA Press Release, January 4, 2011. http://darpa.mil/NewsEvents/Releases/2011/2011/01/04_DARPA_Kicks_Off_Mind's_Eye_Program.aspx

[6] **Radio-frequency identification** (**RFID**) is a technology that uses communication via radio waves to exchange data between a reader and an electronic tag attached to an object, for the purpose of identification and tracking. http://www.en.wikipedia.org/wiki/rfid

[7] IBM's Digital Billboard Displays Individualized Ads By Reading the RFID Data in Your Wallet by Clay Dillow, Popular Science, August 2, 2010. http://www.popsci.com/technology/article/2010-08/ibms-new-digital-billboard-tailoers-individuals

[8] Berger v. United States, 338 U.S. 41, 63 (1967)

[9] Title III of the Omnibus Crime Control and Safe Streets Act of 1968, also known as the "Wiretap Act": The U.S. Supreme Court has held that the Fourth Amendment protection against unreasonable search and seizure extends to the interception of communications and applies to all conversations where an individual has a reasonable expectation of privacy. See *Berger v. New York*, 388 U.S. 41 (1967) and *Katz v. United States*, 389 U.S. 347 (1967). http://it.ojp.gov/default.aspx?area=privacy&page=1284

- prohibits the unauthorized, nonconsensual interception of "wire, oral, or electronic communications" by government agencies as well as private parties,
- establishes procedures for obtaining warrants to authorize wiretapping by government officials, and
- regulates the disclosure and use of authorized intercepted communications by investigative and law enforcement officers.

[10] Title III did not specifically address video surveillance. However, in *United States vs. Torres, 751 F. 2nd 875, 876 (7th Circuit, 1984)* challenging the legality of video surveillance, the Circuit Court found that although Title III did not include video surveillance, its principles could be adapted to determine if evidence obtained by that method had been obtained legally.

[11] United States vs. Torres, 751 F. 2nd 875, 876 (7th Circuit, 1984)

[12] **United Kingdom CCTV Video Surveillance System Operations** Most CCTV surveillance system in the UK are jointly operated and managed by law enforcement and the private sector. Typically CCTV surveillance systems are installed by British Telecom, using fiber-optic cables in strategically positioned downtown business districts or in new shopping centers. http://www.library.ca.gov/crb/97/05/crb97-005.html#ukvideo

[13] Smile! More and More, You're on Camera. Public surveillance video mushrooms despite lack of evidence it works. By Alex Johnson MSNBC June 25, 2008. http://www.msnbc.msn.com/id/25355673/

[14] Social networking websites. Facebook: Founded by Mark Zuckerberg, Facebook was designed as a social networking site for Harvard students. MySpace: Started in 2003, MySpace was a driving force in popularizing social networking and still maintains a large userbase. Twitter: What started out as a microblogging website has quickly grown into a social messaging platform and one of the top social networks in the world. http://www.webtrends.about.com/od/socialnetworking/a/social_network.htm

[15] All wiretapping of American citizens by the National Security Agency requires a warrant from a three-judge court set up under the Foreign Intelligence Surveillance Act. After the 9/11 attacks, Congress passed the Patriot Act, which granted the President broad powers to fight a war against terrorism. The George W. Bush administration used these powers to bypass the FISA court and directed the NSA to spy directly on al Qaeda in a new NSA electronic surveillance program. Reports at the time indicate that an "apparently accidental" glitch resulted in the interception of communications that were purely domestic in nature. This action was challenged by a number of groups, including Congress, as unconstitutional. http://www.en.wikipedia.org/wiki/nsa_warrantless_surveillance_controversy

[16] Third Largest California City May Reject Red Light Cameras, The Newspaper, October 8, 2010. http://www.thenewspaper.com/news/25/2559.asp

[17] Arizona to eliminate speed-enforcement cameras on freeways, by Casey Newton, May 6, 2010. The Arizona republic http://www.azcentral.com/news/articles/2010/05/06/20100506arizona-toeliminate-speed-cameras.html

[18] Growing backlash against TSA body scanners, pat-downs by Phil Gast, CNN, November 12, 2010. http://articles.cnn.com/2010-11-12/travel.screening_1_body-scanners-pat-downs-travel

[19] TSA to investigate body scan resistor. Oceanside man took a stand against security, went viral. By Robert J. Hawkins Union Tribune, November 15, 2010. http://www.signonsandiego.com/news/2010/nov/15/tsa-probe-scan-resistor/

[20] A Flying Car To Debut In 2011 by Bryan Nelson Forbes Magazine, July 29, 2010. http://www.forbes.com/2010/07/28/flying-car-transition-technology-terrafugia.html