

Law Enforcement needs another Stephanie Kwolek

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.

The views and conclusions expressed in the Command College Futures Project and journal article are those of the author, and are not necessarily those of the CA Commission on Peace Officer Standards and Training (POST).

Law Enforcement needs another Stephanie Kwolek

Law Enforcement is a job like no other. Officers work patrol within the jurisdiction he or she is employed, investigating suspicious behavior and responding to citizen-generated calls for service, with the vast majority of time spent writing reports. Within these parameters lies an inherent danger: confronting criminals and being alert and prepared to deal with threatening situations. On a regular basis officers respond to emotionally-charged calls and must maintain order and enforce the law, while also being compassionate. All too often, especially when drugs and alcohol are added to the equation, officers can become the target of anger and aggression. Police officers are often in situations where they have to use deadly force which results in costly lawsuits, distraught family members, post-traumatic stress, and on rare occasions, collateral damage.

These inherent dangers underscore why the job of a police officer or sheriff's deputy was ranked by Forbes magazine as the 10th most dangerous job in America in 2007. During that year, law enforcement officers died in the line of duty at a rate of 21.4 per 100,000 workers, according to the Forbes study (Kirdahy, 2008). Unfortunately, this trend seems to be worsening. According to data released on July 21, 2010 by the National Law Enforcement Officers Memorial Fund, a private non-profit organization dedicated to honoring the service and sacrifice of America's law enforcement officers, the first half of 2010 saw a 43% rise in line-of-duty deaths compared to the same period the previous year, with California topping the list (Morison, 2010). Officers need to be well trained to handle hostile individuals, and they need to be properly equipped. What law enforcement needs in another Stephanie Kwolek!

Stephanie Kwolek is not a name commonly associated with the law enforcement profession, even though her work has saved the lives of more police officers than perhaps anyone else in America. Famous people in this profession include distinguished individuals such as Sir Robert Peel, considered to be the father of modern policing, William Bratton “America’s Top Cop,” and J. Edgar Hoover, the father of the Federal Bureau of Investigation. She has not even merited a mention as often as some that are not as distinguished, but more infamous, like Mark Fuhrman, the former LAPD detective who perjured himself during the OJ Simpson murder trial.

So who is Stephanie Kwolek?

Stephanie Kwolek is a chemist who worked for the DuPont Company. In the 1960’s she was working on a project to create fibers capable of performing in extreme conditions. With an impending gas shortage, her assignment was to find a lighter, stronger fiber that could be used to make tires. The assignment involved synthesizing and dissolving large molecules known as polyamides into solutions that could be made into fabric fibers. She unexpectedly discovered that one of her mixtures created a fiber of very high strength and stiffness. In short, Stephanie created what we now know as Kevlar.

Kevlar is the fiber used to make ballistic vests that protect the wearer from firearm projectiles and explosive shrapnel (Kirsch, 2007). In 1975, following an evaluation period by the National Institute of Justice (NIJ) to determine if wearing lightweight, concealable body-armor was possible by officers, all-Kevlar vests began being manufactured and marketed commercially by private industry (US Department of Justice Report, 1998). Officers across the nation started donning these vests and still do today. Stephanie’s tenacity to find a strong fiber revolutionized law enforcement, and her

discovery has saved thousands of police officers' lives since being commercially developed. Law enforcement needs another Stephanie Kwolek to help revolutionize the most common less-lethal device carried by police officers across the nation: the Taser.

Taser to Tetanizing Weapon

Advances in technology occur at a staggering rate. Most computers are obsolete within a year, cellular phones are considered antique within six months, and new gadgets that are sure to make life easier emerge daily. Yet, there have been only minor changes to the two primary weapons carried by police officers across the nation: the handgun and the Taser (Smith, 2007). A possible solution could be a major transformation to the current Taser technology to replace not only the current Taser X26, but the handgun as well.

Less-lethal weapons like the Taser have been available to officers for more than 20 years; however, they have limited effectiveness because of their short range, and the need for two prongs to puncture clothing and embed in the skin to create a complete circuit for the electrical stimulus to be successfully delivered. Tasers are not a viable option during potentially lethal encounters. Mishaps involving firearms and Tasers are frequently publicized and sensationalized and form the framework for the call for changes in police weaponry.

The real concern with the Taser is two issues that have not been rectified: its effective range is limited by the length of the wire that must be connected to the device, (35 feet maximum) and that the two darts must puncture clothing and embed in the skin for the circuit to be complete (so the electrical stimulus can be delivered. It is time for a portable, hand-held device that can subdue an aggressive combatant, without causing long-term injury or death, and is not limited by distance or functionality. A device that

could successfully do this may also eliminate the need for police officers to carry firearms.

While a taboo topic in the United States, this is not without precedent. Uniformed patrol officers in the United Kingdom do not carry guns (Waldren, 2007). Data does not suggest that the UK has any less violent criminals, nor do they have a better crime rate. In fact data suggests the opposite: the UK has a higher per capita crime rate than the US (Slack, 2009). Notwithstanding the socio-political issues such as the armed criminals, crime rate comparisons, or constitutional protections (like the 2nd Amendment), the fact remains the UK has a police model critics can use to illustrate the potential for large metropolitan police agencies with officers who do not carry handguns.

Imagine a hand-held device that could effectively subdue a combative individual without causing any long-term injury or death, and is not limited by distance or functionality. No more thin wires connected to the device; no more darts that must penetrate clothing and skin. Imagine also the disappearance of wrongful death litigation from the police use of deadly force. Law enforcement needs another Stephanie Kwolek to turn this vision into a reality!

Where the Technology is today

Fortunately, there are some that see an advantage to improving the current Taser technology and are willing to help law enforcement with its pursuit to find an effective weapon that will reduce the incidents of death that result from police use of force. Several technological designs have been patented that would drastically improve the overall functionality of the Taser eliminating the need for the two wired darts, thereby increasing the effective range and efficiency of this type of less-lethal device. To date, a new device

has not been manufactured, let alone allowed enough time to replace the current Taser technology.

One business, HSV Technologies obtained a US Patent # 5,675,103 for a non-lethal weapon that uses ultraviolet laser beams to harmlessly immobilize people. This device, referred to as a “tetanizing weapon,” uses two beams of ultraviolet radiation to ionize paths in the air that electrical current can travel through (Batista, 2000). Although HSV Technologies was never able to deliver a device that was small enough for wide-spread law enforcement application, and eventually went out of business, the technology and brainpower exists to develop such a device. Another patent obtained by Inventor William Arthur Keely revealed the concept of having a high efficiency power supply circuit with low power consumption, entirely contained inside of a projectile that would be fired from a Taser-like handheld device, thus eliminating the short distance restrictions of the current Taser technology (Keely, 2005). These two concepts illustrate the potential for new, innovative technology to replace the Taser. With promising devices like tetanizing weapons on the horizon, law enforcement has an opportunity to reshape less-lethal force options to enhance effectiveness in the safe capture of criminals, and also to improve community relations exponentially.

Impetus Driving Tetanizing Weapon

Community support is an essential element of effective policing. Law enforcement professionals must continue to improve community relations and reduce crime by developing partnerships and collaboration, but this cannot be done without trust. One of the biggest obstacles to develop the needed trust is the issue of police use of force. The importance of police having the ability to effectively incapacitate a person posing a

threat, without killing the person, will have a positive impact on the law enforcement profession. Police agencies can improve their image by continually striving to procure the best equipment for the task at hand. The tetanizing weapon is just the type of equipment that can help accomplish this.

The tetanizing weapon, which uses ultraviolet laser beams to ionize pathways through which electrical current can flow, is the type of emerging technology that will help frame the future of law enforcement's image as professional and efficacious. It is a device that will subdue combative subjects without having to physically force or shoot them. From a risk management perspective, it has the potential to save millions in overtime and mental health costs associated with officer-involved shootings, as well as limit expensive litigation that often follows these incidents.

Statistics on police-related deaths show that of all police-related fatalities, only a fraction involves the use of a Taser. The most liberal figures available report that in the past 28 years, 674 individuals have died in North America after being tasered by police ("Major Revision – 674 Dead After Taser Use," 2011). In other words, an average of 24 people a year die after being tasered. It is important to note that this represents only 0.03% of the average annual reported Taser deployments. The number of justifiable police homicides that occur every year, on average, is 358. This means 93% of police fatalities are by means other than a Taser (Dwyer, 2010.) Clearly Tasers save lives, and reduce costly litigation by providing a means to subdue aggressors without resorting to lethal force. Expanding on this concept by extending the distance at which officers can engage a threat is a necessary next step in use of force situations.

To “tetanize” means to cause severe contractions or spasms to the point that tension in the muscle is constant, resulting in a loss of muscular control. The tetanizing weapon differs from current Taser technology by using ultraviolet light to ionize the pathway for electricity rather than Taser’s wires. The science behind using UV light to create the pathways to deliver the electrical stimulus is quite sound, and has been successfully tested and replicated many times (Batista, 2000). However, there are no reports No law enforcement agency or military organization is using the weapon currently. The issue that needs to be resolved centers around the amount of energy needed to ionize the pathways. The prototypes that have been created by private industry and the military are about the size of a large suitcase. For tetanizing weapons to become commercially viable for law enforcement use, the device needs to be reduced to the size of a handgun or small flashlight. Without a consistent advocacy, though, those who develop these weapons may not understand the urgency of their possible use.

Law enforcement leaders should aggressively advocate to private vendors and the military for a less-lethal device such as the tetanizing weapon: a device compact enough for officers to carry on a gun belt that can effectively incapacitate a person posing a deadly threat at 100 meters or more, without killing the person. The law enforcement equipment industry is a billion-dollar-a-year endeavor. With such high collective buying power, businesses are willing to invest in the research and development needed to make the tetanizing weapon a reality. While many entrepreneurs may see an opportunity to capitalize on tetanizing weapons, Taser International is a company poised to do it. They are the industry leader in the current Taser technology, and the company has the financing, technical expertise, and industry connections to successfully develop,

manufacture and market the tetanizing weapon. If they do not, however, there should be many others willing to step in and fill their shoes.

Will they replace guns though?

While tetanizing weapons as another less-lethal option would be great technological progress, the idea that they could replace the firearm would be a major shift for law enforcement, to say the least. Law enforcement leaders are keenly aware of the political turmoil that often follows officer-involved shootings. Law enforcement may need to start preparing for the realization that officers may not have access to a lethal force option on the gun belt because another device, the tetanizing weapon, will be available to temporarily incapacitate combative individuals, stopping any real or perceived threat. This reframing will need to occur at all levels: new officers in the police academy, front-line officers, field supervisors, mid-managers, and upper command personnel, and it will take time.

As Thomas Friedman observed in his book, *The World is Flat*, computers did not change everything overnight, but within a decade, they did dramatically change almost every aspect of human life (Friedman, 2005). Accordingly, law enforcement will need time to accept, adapt to, and perfect the use of any new tetanizing weapon technology. Many officers were reluctant to carry a semi-automatic weapon in the late 1970's and early 1980's because the officers were unfamiliar with semi-automatic weapons. Semi-automatic weapons have so many moving parts, they were seen as unreliable and prone to jamming. The full transition to semi-automatic weapons took about a decade. Now, virtually no officer would carry a revolver because the semi-automatic is such a reliable weapon with a much higher bullet capacity. This example illustrates how long it can take

for change to be engrained within a culture. By starting to create the vision of a weapon that could replace the need for firearms now, the transition to a tetanizing weapon in the future will be less foreign and more understood and accepted.

Conclusion

As more and more people become familiar with tetanizing weapons, private industry entrepreneurs will see them as an opportunity to capitalize on the concept. Legislators should also see the potential of a force option for the police that would lower litigation, enhance safety and help bridge gaps between police and community members. The more people learn about and like an idea, the more support there will be to help facilitate it into a reality.

While there are still major technological advances that need to occur to make this device a reality, it's time that law enforcement professionals help facilitate such a device becoming a real alternative for deadly weapons in the future. Recognizing and finding solutions has come to define what law enforcement officers do: solve problems. The continued police use of deadly force has emerged as a problem that needs to be addressed. The tetanizing weapon may be the tool that will keep officers safe, while providing a permanent alternative to the handgun.

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