

Local Law Enforcement's Use of Emerging Technologies in Response to Active Shooter
Situations

By

Lieutenant Steven Johnson
San Marino Police Department

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).

© Copyright 2010

California Commission on Peace Officer Standards and Training

Local Law Enforcement's Use of Emerging Technologies in Response to Active Shooter Situations

It's a quiet morning in early October. You are the Watch Commander and notice the crispness in the air as the weather shrugs off the last of the summer heat. The day watch officers began their briefing at 7:00 am, and have been busy patrolling the city for over an hour. You monitor the radio traffic between the communications operators and the police officers. So far, it is a normal Tuesday morning. Before tackling a stack of reports that need to be approved, you contemplate walking across the street to get one of those "double espresso frappuccino macchiato" drinks with whipped cream, but know your cardiologist, and more importantly, your family, want you to limit your sugar, caffeine and fat intake.

Suddenly, the communications operator's voice changes tone; there is a distinct fear in her voice when she transmits a radio message for all available officers to immediately drive to the Wondertown High School. A male caller said he placed several explosive devices throughout the school, and mentioned the devices contain both timed and remotely operated fuses. As he screamed profanities at the communications operator, he mentioned that he and his "insane posse" were armed with rifles, and were going to shoot as many students, teachers and police officers as possible. As the caller disconnects the call, you hear screaming and what sounds like a gunshot. Seconds later, every emergency phone line begins to ring. Your worst fears have come true.

You immediately authorize the activation of several emerging technologies to address this active shooter incident. You are thankful the Police Chief, City Council, Board of Education, the local houses of worship and the business community had the foresight to implement these

technologies. Just a handful of years ago, your officers would be responding to the school with just a pistol, a shotgun and a lot of prayers.

Background

According to the United States Department of Homeland Security, the term “active shooter” is defined as, “An Active Shooter is an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms(s) and there is no pattern or method to their selection of victims.”¹ A second definition was offered by Borelli, who stated: “Suspect(s) activity is immediately causing death and serious bodily injury. The activity is not contained and there is immediate risk of death or serious injury to potential victims. The Active Shooter scenario is dynamic, evolving very rapidly, and demands an immediate deployment of law enforcement resources to terminate the life threatening situation.”² A third definition, similar to that offered by Borelli, incorporated an additional clause, “90% of the shooters are suicidal.”³

The first documented active shooter incident occurred on April 9, 1891, when James Foster, a seventy year old man, attacked a playground full of children who were attending St. Mary’s Parochial School located in Newburgh, New York. An unknown number of children were injured; fortunately, none of the students were killed.⁴ The first active shooter incident that successfully resulted in student deaths occurred on May 17, 1927 at Bath Township, Michigan. Ironically, the perpetrator, Andrew Kehoe, used a rifle to detonate over a thousand pounds of dynamite at the Bath Consolidated School, resulting in the deaths of thirty-eight children and

¹ (United States Department of Homeland Security, 2008)

² (Borelli, Immediate Response Revolution, Introduction, 2007)

³ (Bayne, 2004)

⁴ (Borelli, Immediate School Attacks, History of School Attacks in America, 2007)

seven adults. The only person he shot was himself, when he returned to his house and committed suicide.^{5 6} The first recorded post-secondary (college or university) incident occurred on June 4, 1936 at Lehigh University, located in Bethlehem, Pennsylvania. A student, Wesley Crow, shot and killed his English professor, Wesley Phy, over a grade dispute. Crow committed suicide after murdering Phy. (Borelli, August 6, 2007).⁷ Tragically, schools have often been the site of these incidents in the decades since.

On August 1, 1966, former United States Marine, Charles Whitman, went to the 30th floor of the University of Texas at Austin Observation Tower, where he began to shoot at students and faculty. He murdered 13 people that day, while injuring an additional 31 students and faculty members. Some of Whitman's shots were later determined to be in excess of 500 yards from the tower. It was later discovered that he had murdered his wife and mother the previous day with a knife. Whitman was eventually killed by three Austin Police Officers, despite having no tactical training and being armed with .38 caliber revolvers. The officers' initiative to engage Whitman undoubtedly prevented further deaths.^{8 9}

Perhaps the most notorious active shooter incident occurred at Columbine High School in Littleton, Colorado on April 20, 1999. This incident resulted in fifteen deaths and twenty-four wounded students and teachers before the suspects committed suicide. As the slaughter occurred, several officers from the Littleton Police Department and the Jefferson County Sheriff's Department stood outside the buildings while suspects Dylan Klebold and Eric Harris slaughtered their classmates. The officers were told to hold a perimeter and wait for the arrival of

⁵ (Borelli, Immediate School Attacks, History of School Attacks in America, 2007)

⁶ (Pawlak, Just Another Summer Day: The Bath School Disaster, Unknown)

⁷ (Borelli, Immediate School Attacks, History of School Attacks in America, 2007)

⁸ (Borelli, Immediate School Attacks, History of School Attacks in America, 2007)

⁹ (AssociatedContent.com, Charles Whitman- The Texas Tower Massacre, 2006)

a SWAT team, which planned to enter the building. Before the SWAT team arrived, both suspects had finished their shooting spree and had committed suicide.¹⁰ Sadly, Columbine was far from the last time mass homicide has visited American campuses.

On April 16, 2007, Virginia Polytechnic Institute and State University (Virginia Tech) student Seung Hui Cho shot and killed two students in a dormitory. As the murders were being investigated by the campus police, a campus wide e-mail notice regarding the murders was delayed for over two and a half hours. When the notice was finally sent, Cho was beginning a second round of shootings. Cho murdered twenty five students and five faculty members, before turning his pistol on himself. Despite an immediate response from law enforcement officers, Cho completed the shootings in less than seven minutes.^{11 12 13}

Schools and universities have not been alone experiencing active shooter homicides. Most notable amongst the litany of incidents are:

- On July 18, 1984, unemployed security guard James Oliver Huberty entered a McDonald's restaurant in San Ysidro, California, and began shooting at customers. When officers arrived at the scene, they were told to take no action until a SWAT team arrived at the location. The shooting spree lasted over seventy-seven minutes, and resulted in the deaths of twenty-one people, before a police sniper killed Huberty.¹⁴
- Between 1986 and 1999, the US Postal Services suffered fifteen incidents where current or former employees killed fellow employees. The occurrences became so commonplace

¹⁰ (Fretz, R. The Stopwatch of Death, Part II, 2007)

¹¹ (Borsch, The Stopwatch of Death, Part I, 2007)

¹² (Borelli, Immediate School Attacks, History of School Attacks in America, 2007)

¹³ (MSNBC, Worst U.S. Shooter Ever Kills 33 on Va. Campus, 2007)

¹⁴ (Gresko, 2004)

the phenomena earned the term “going postal”. A study of these tragedies noted the fifteen suspects killed forty victims.¹⁵

- On October 16, 1991, George Jo Hennard drove his pickup truck through the front of the Luby’s Cafeteria, located in Killeen, Texas. Hennard murdered twenty-four people, and wounded at least twenty more during a fifteen minute rampage. Coincidentally, five law enforcement officials were teaching a class near the restaurant when they heard gunshots. The officers engaged Hennard, severely wounding him before he committed suicide.^{16 17}
- On December 5, 2007, nineteen year old Robert Hawkins walked into the Van Maur/Westroads Mall in Omaha, Nebraska, and murdered eight mall employees and customers, while wounding four others. He then turned his semiautomatic SKS rifle on himself, successfully committing suicide before law enforcement officers arrived at the location.^{18 19 20}
- On March 29, 2009, Robert Stewart burst into a North Carolina nursing home and began shooting at residents and caretakers. Police Officer Justin Garner, the only officer working that day for the Carthage Police Department, arrived at the nursing home in less than five minutes, and without delay aggressed Stewart. Both Stewart and Garner were injured during the exchange. Unfortunately, seven residents and a nurse were murdered by Stewart.^{21 22 23}

¹⁵ (Califano, J. The United States Postal Service Commission On A Safe And Secure Workplace, 2000)

¹⁶ (chron.com, Shooting rampage at Killeen Luby's left 24 dead, 2001)

¹⁷ (Hayes, 1991)

¹⁸ (Kucirek, J. Mall Shooting Victims Identified, 2007)

¹⁹ (Sloan, K. Six Deadly Minutes: Calls to 911 offer chilling account, 2007)

²⁰ (cbsnews.com, Mall Shooter a Dropout with Criminal Past, 2007)

²¹ (Foreman, 2009)

Tragically, these examples and more suggest some common themes. First, officers cannot wait for SWAT or similar tactical teams to arrive before engaging the suspects. Second, a small number of officers, even a single officer, who aggressively engages the suspects, may positively change the outcome of the situation. Third, despite the best intentions, the officers will usually arrive after a significant number of victims have been killed or wounded.

Is This Really a Significant Problem?

For his book, *School Shootings*, Joseph A. Lieberman researched worldwide active shooter incidents that occurred at elementary, middle and high schools between December, 1974 and December, 2008. He verified a total of 159 shootings, of which 117 incidents occurred in the United States.²⁴ Between the years 1987 and 2003, there were 17 active shooter incidents at American secondary schools. Between 2003 and 2007, though, there was a dramatic increase in active shooter incidents at American secondary schools, as listed below:²⁵

	2003	2004	2005	2006	2007
Number of Incidents	1	2	2	8	3
Fatalities (including suspect)	2	2	10	2	2
Injuries (including suspect)	0	0	13	7	11

Another author, Ron Borsch, examined the number of murder attempts that were made by active shooters against their victims. The number included those who were killed or wounded by the suspect. Borsch divided the amount of murder attempts by the number of minutes in which

²² (cbsnews.com, 2009)

²³ (Marcou, 2009)

²⁴ (Lieberman, 2008)

²⁵ (Borelli, *Immediate School Attacks, History of School Attacks in America*, 2007)

the shootings occurred, subsequently developing the “Stopwatch of Death” research model.²⁶

According to Borsch, the model provides “a reliable unit of measurement with which to determine the scale of one active shooter incident relative to another,” or, the number of murder attempts / number of minutes = X. A comparison of some of the more noted incidents illustrates the concept.

The 1966 Texas Tower murder attempts committed by Charles Whitman translated to 0.5 murder attempts per minute. This was similar to the 1984 San Ysidro McDonald’s restaurant shooting, which also indicated a 0.5 “Stopwatch of Death” factor. Seung-Hui Cho’s Virginia Tech University toll was thirty dead and twenty-five wounded during seven minutes of shooting. This translates to a Stopwatch of Death factor of 7.9 murder attempts per minute. Cho’s factor was four times greater (2.1 murder attempts per minute) than that committed by Dylan Klebold and Eric Harris at Columbine High School. According to Borsch, “The killers try for a bigger score card than their predecessors, which means that the cops need to be ready to go in and take care of business.” Consequently, Borsch opined “time is the key element in the development of countermeasure strategies.” One suggested measure is to profile likely shooters and stop the incidents before they start.

Why Don’t the Police Profile the Active Shooters?

There has been extensive research regarding the profiling of active shooters. A 2009 School Shootings Report provided a profile grid of ten primary risk factors associated with active shooters:

1. Male

²⁶ (Borsch, The Stopwatch of Death, Part I, 2007)

2. Aged 14-20
3. Troubled Home Life
4. Mental Health Problems
5. Psychotropic Drugs
6. Bullied by Others
7. Poor Academic Performance
8. Social Fringe/ Rejected by Peers
9. Suspension/ Graduation Timeframe
10. Frequent Anger/ Rage

The Report did note great differences, however, in the number of active shooters that actually possessed these factors.²⁷ This disparity in shooter demographics is consistent with the findings of others.

In a 2001 study conducted by the Federal Bureau of Investigation into the Columbine High School massacre, the researchers stated, “One response to the pressure for action may be an effort to identify the next shooter by developing a "profile" of the typical school shooter. This may sound like a reasonable preventive measure, but in practice, trying to draw up a catalogue or "checklist" of warning signs to detect a potential school shooter can be shortsighted, even dangerous. Such lists, publicized by the media, can end up unfairly labeling many nonviolent students as potentially dangerous or even lethal. In fact, a great many adolescents who will never commit violent acts will show some of the behaviors or personality traits included on the list.”²⁸ Further, the study mentioned, “This is simple statistical logic: when the incidence of any form of

²⁷ (Freydis, The School Shootings Report, 2009)

²⁸ (O'Toole, 2001)

violence is very low and a very large number of people have identifiable risk factors, there is no reliable way to pick out from that large group the very few who will actually commit the violent act.”²⁹ Does that mean we must merely wait for an incident to occur? To the contrary; there are predictive factors and emerging technologies we can use to combat these phenomena.

Predictive Factors

One researcher, Stan Duncan, noted there are several “sociological predictive factors” in regard to active shooters. Ninety-nine percent plan their attacks ahead of time, sometimes several years in advance. The active shooter will have access to and a fascination with firearms, and will “train assiduously.” Duncan asserts they suffer from mental illness, in which ninety percent suffer from some type of rejection, while in “proximity to a personal crisis.” They will engage in stress inoculation training, often through violent video games; and rarely plan to engage law enforcement in extensive combat. Finally, most expect to die at the scene, as evidenced by most shooters failing to bring body armor, ballistic helmets, first aid supplies and food to the location.³⁰ (nixle.com 2010)

A second author, Phillips, noted, "The shooter may not be very well-prepared, or could be extremely prepared like Seung-Hui Cho or Charles Whitman at the University of Texas bell tower." Phillips continued by stating, “Orchestrating a murder spree is something that is fantasized about, planned out and rehearsed for weeks, months or possibly years before the shooting occurs.”³¹

²⁹ (O'Toole, 2001)

³⁰ (Duncan, 2008)

³¹ (Phillips, Unknown)

Emerging Technologies

Active shooters may appear at any school, university, house of worship, business location or government office. In essence, there is a seemingly endless supply of targets in every community. Law enforcement does not receive notice regarding imminent attacks that are often planned over months or even years. According to research, there appears to be no legitimate way to profile a shooter before their attack. Consequently, officers may receive notification of these incidents only after the shooting has begun. The employment of emerging technologies, though, may result in innocent lives being saved, along with the more rapid apprehension of those who are trying to cause harm.

In March of 2009, an expert panel of diverse professionals met to provide input regarding the use of emerging technologies to resolve active shooter situations. The group believed several technologies would provide significant tools to help safeguard communities. Amongst the myriad of options becoming available, the panel concluded the following ones held the most promise:

- Many thought training scenarios that used real time information would be a benefit. The officers could use the information, coupled with digital maps and building floor plans, to decide what weapons and tactics, if any, to use against active shooters. This technology could also be used to determine the best routes for entering and evacuating buildings in other emergencies, such as fires or building collapses.
- Several noted the increased sophistication of fifth generation warfare technologies, including “hunter” vehicles and weapons systems that could identify visually undetectable explosives carried by assailants. The experts noted the hunter vehicles could

“track and attack” these violent individuals before they were able to activate their explosive devices.

- The experts noted the increased use of facial, voice and scent recognition tracking technologies for vehicles and weapons in handheld systems similar to what is seen on the television show “24.” The combination of these technologies would allow constant monitoring of people who have demonstrated a desire to initiate violent acts.
- Several of the experts expressed their concerns that responding officers who discharge their firearms may cause the hunter vehicles to attack the officers. In response, two other panelists mentioned emerging technologies that generate an acoustic “fingerprint” for firearms. As the panelists explained, the officers’ weapons would have their acoustic fingerprint loaded into the hunter vehicles software, which would automatically distinguish the officers’ firearms from that of the active shooter. With the addition of multiple antennas throughout a building or open area, the hunter vehicles could use this information to determine the location of the shooter, as is done now by the US Army to counteract snipers with their “boomerang” acoustic detection system.
- Emergency safety communications that may be directed to the proper recipients, such as school administrators, business managers, or customers at a mall, may save innocent lives during an active shooter incident. One company, Nixle, provides such a service for local municipalities and the public, all at no cost to the subscriber. Besides community, advisory and traffic type messages, the company will automatically send e-mail and text messages regarding emergency alert situations directly to the subscriber’s mobile device.

Further into the future, the panelists discussed “Multi Dimensional Mobility Robots” to intercept active shooters and rescue injured victims. Several of the panelists also mentioned a miniaturized version of the Department of Defense’s Helicopter ALert and Threat Tracking (HALTT) technologies to detect shooters and their weapons. These systems could mitigate or eliminate an armed assailant, preventing harm to innocent citizens. A final future technology would be the use of chemical robots, also known as “ChemBots.” ChemBots will be soft and flexible, allowing them to covertly maneuver through openings smaller than their dimensions. They may then perform a prescribed task, such as room searches, or for tracking and neutralizing an active shooter.

Of course, no system is perfect, and none can address all of the myriad issues an active shooter may present. Even in today’s landscape, though, one issue will always remain: how do we pay for the tools necessary to effectively prepare and respond?

Is there a cost for not implementing these emerging technologies?

One of the basic rules of economics is that everything has a cost. When examining the implementation of emerging technologies, those who have the authority to make purchases, such as city councils or school boards, must decide what is the best use of limited funds. There will be arguments for purchasing the emerging technologies to prevent the killing of innocent students, parishioners and employees. These arguments may be countered by calls for ongoing necessities such as infrastructure repairs, better classrooms and more recreation facilities.

The political body that decides to purchase the necessary emerging technologies to mitigate an active shooter scenario will know they have taken a bold step to improve the safety of their constituents. Should an actual attack occur, these tools will seek assailants, control and

contain them, while also providing immediate information to the responding officers. As necessary, they may be used to incapacitate the assailants, possibly in areas in which the officers may not have access, while providing effective protection for students, parishioners, and business and government employees.

Elected officials who may deem the acquisition of the emerging technologies as unnecessary, or simply misguided, may enjoy the money they “saved” in the short term. If these decisions are made, though, and an active shooter situation arises, there will be no means to proactively locate the suspects before anyone is harmed. Responding officers will have minimal information regarding the number of suspects and the types of weapons they may possess. Any information the officers receive could be stale, unreliable, or contradictory to other intelligence.

For those who are counting on the police for salvation, the minutes will seem like hours. The officers may have similar feelings of frustration, especially those who know of Borsch’s “Stopwatch of Death” model, where each additional minute of delay will cost lives. In the end, a decision will be made that will prescribe either a proactive or a reactive response to active shooter situations. There will be a corresponding cost for either decision. One decision will be made in terms of equipment and training costs. However, the other decision may be much more expensive, since it will be calculated in terms of loss of life and permanent injury.