

**IS LAW ENFORCEMENT READY
FOR
THE SIX MILLION DOLLAR MAN?**

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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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Is Law Enforcement Ready for the Six Million Dollar Man?

By Donald A. Deming

In the Six Million Dollar Man, a popular television series of the 1970's, astronaut Steve Austin was nearly killed in the crash of an experimental aircraft he was piloting. He sustained substantial injuries which could have left him severely disabled for the remainder of his life. Instead, he received advanced medical treatments and therapies which restored his physical condition, and in fact, enhanced it. The treatments he received made him "better, stronger, faster" and gave him abilities far superior to what he possessed before the accident.

Forty years later, with the incredible advances in medicine and related fields, the fantasy of Steve Austin is becoming a reality. This reality will include officers returning to work from significant duty-related injuries, equipped with rehabilitative devices such as ocular and cochlear implants, and even advanced prosthetics. This will inevitably create new challenges and opportunities for the officer and for their agencies. One of the most significant challenges will be to existing hiring standards. Applicants with similar accoutrements will likely challenge existing hiring standards and redefine "reasonable accommodations." These changes are coming, and law enforcement can either anticipate and prepare for them, or be caught unprepared and have change forced upon it. The Six Million Dollar Man is coming. The question is, are we ready?

Brief History

The Federal Bureau of Investigation's annual report of "Law Enforcement Officers Killed and Assaulted" recorded 54,774 officers assaulted in 2011 (the most recent year available). Of

those assaulted, 26.6 percent (or 14,570) sustained injuries of varying degrees.¹ In addition to these injuries, countless officers are injured each year through accidental means. Whether intentional acts or by mishap, the more serious injuries may end careers or take long periods of recovery and rehabilitation. Some officers may never fully recover from their injuries, and will be left with disabilities that substantially change their lives. The variety of injuries is staggering; some minor, but many much more serious.

The RAND Corporation's 2008 study "Occupational Safety and Health for Public Safety Employees" gives insight into the scope of the problem of injured law enforcement officers. RAND studied data from a sample of public employees in California to identify the types of injuries sustained, and to examine the rate at which public safety employees claim permanent, partial disability (PPD) as compared to non-public safety employees. Fully disabled public safety employees were not considered as they would presumably be retired. The study found the most common injuries for law enforcement officers was "sprains and strains" (64 percent of all injuries), "contusions and open wounds" (20 percent), "fractures and dislocations" (5 percent), and "all others" (10 percent). The study further found that law enforcement officers are three times more likely to receive PPD benefits as a result of a workplace injury than non-safety employees. Disability rates also differed by age. Public safety employees in each of four age categories (under 40, 40-50, 50-60, and over 60) saw substantial increases in the percentage of employees receiving PPD benefits as they aged as compared with non-police employees. The receipt of PPD benefits increases from 39.5 percent of all public safety employees for officers

¹ <http://www.fbi.gov/about-us/cjis/ucr/leoka/2011/officers-assaulted-1/officers-assaulted>

under forty, to 62.5 percent for officers sixty and older. This is a stark contrast to non-public safety, whose rates of PPD benefits dropped to the lowest after age sixty.²

The good news is that advances in medicine hold great promise to reduce the impact of these injuries. Advances being pioneered for members of the military will undoubtedly become more commonplace. These advances go beyond mere tending to injuries to stabilize the patient. With tissue engineering, our mythical six million dollar man is on the cusp of becoming reality. This will be seen primarily in regeneration of lost tissue, advanced prosthetics and optical implants. In fact, even those who have lost use of their limbs may have the promise of a recovery to full functionality.

Current and Future Medical Advancements

The Armed Forces Institute of Regenerative Medicine (AFIRM) was established in 2008. The stated purpose of AFIRM is to advance regenerative therapies and technologies for wounded military personnel, which includes rapidly re-growing human tissue. AFIRM envisions it will regenerate muscles and even full limbs in the near future. Terry Irgens, AFIRM Project Director, envisions a future when battlefield injuries will be treated in weeks rather than months, and that treatments will make soldiers fully functional.³ The “Textbook of Military Medicine” has an entire chapter dedicated to artificial limbs. It discusses the future of prosthetics, including interface and control systems. The Textbook broadly defines the study of prosthetics and supporting systems as “mechatronics.” Through these and other medical advances gravely injured military personnel are being rehabilitated. As this field of study advances, soon we may see them returning to full active duty, or upon separation of their military service, assuming

² http://www.dir.ca.gov/chswc/reports/chswc_publicsafetyemployeesreport2008.pdf

³ http://www.army.mil/article/55507/Regenerative_medicine_working_wonders/

careers in other strenuous fields requiring optimal health and fitness. As this becomes more common it will most certainly be applied universally.

Other, similar developments are being advanced as well. Through “tissue engineering” scientists presently have the ability to grow skin, blood, heart valves, bone, and other tissue from one’s own cells.⁴ The first major organ, the bladder, was grown in 2007, and the first windpipe in 2009. Within five years the first liver and pancreas may be grown; Nobel laureate Walter Gilbert believes that within just a few decades, it will be possible to grow practically every organ of the body in the laboratory.⁵ Beyond “traditional” medicine, there are exciting advances in other fields that will provide additional therapies and treatments for injured officers.

Prosthetics have become greatly advanced in recent years. At the 2013 annual meeting of the American Association for the Advancement of Science, researchers reported on the clinical trials of their “smart” prosthesis, which connects directly to the human nervous system, giving the recipient greater flexibility and even sensory feedback.⁶ Some prosthetics have the ability to sense resistance and are sensitive enough to pick up a Styrofoam cup without crushing it. As these devices advance in utility and functionality, officers of the future may be able to return to full duty even after having lost the use of a limb or other major capacities of their physiology.

⁴ Kaku, M. (2011). *Physics of the Future: How Science Will Shape Human Destiny and Our Daily Lives By 2100*. New York: Doubleday.

⁵ *ibid*

⁶ <http://www.theengineer.co.uk/sectors/medical-and-healthcare/news/prosthesis-offers-sensory-feedback-and-intuitive-control/1015572.article>



Other significant advances in injury repair are to restore vision. Optical implants have been designed which can replace lost vision under certain circumstances.⁷ Other innovations have also been developed which might be used to restore or enhance one's vision. Canadian film maker Rob Spence (also known as "Eyeborg") lost his eye in a shooting accident years ago. His false eye has been fitted with a video camera and Wi-Fi transmitter which can download and store images onto his computer.⁸ Should a device be developed that combines both features (restoration of vision and video capability), an officer equipped with such a device might have certain advantages over officers with regular vision. Just as vision might be restored and enhanced, other advances promise to alleviate the impacts of other injuries and disabilities.

⁷ <http://www.livescience.com/27252-eye-implant-restores-vision-blind.html>

⁸ <http://www.popsci.com/scitech/article/2009-06/eye-robot>



Even officers with varying levels of paralysis may be capable of returning to work in the future. Lockheed Martin has produced exoskeletons that may be worn which can significantly enhance an individual's strength.⁹ The Lockheed Martin prototypes resemble leg braces with a large backpack. Available later this year, these tools are meant for use in factories, shipyards and similar settings. The concept, however, has already been adopted for the rehabilitation of paraplegics. California-based Ekso Bionics manufactures exoskeletons designed for just this purpose. They have sold 29 of their exoskeleton suits that allow the disabled to walk for the first time. One can only wonder how much more readily these tools will be available as these devices are refined and made "better, stronger, faster."

⁹ <http://money.cnn.com/gallery/technology/2012/09/07/9-superhuman-prosthetic-innovations.fortune/9.html>



COURTESY: ESKO BIONICS

In addition to the restorative or rehabilitative use of these technologies, there is also the possibility that certain treatments will be used by officers who are in otherwise perfect health. George Friedman, founder and CEO of the intelligence and forecasting corporation Stratfor believes that if genetic research delivers all that it promises, life expectancy will be increased and a variety of genetic diseases will be eradicated or substantially reduced by the middle of the 21st century.¹⁰ As these treatments become more and more commonplace, it is logical to believe that some may opt for certain treatments that will enhance their abilities in a variety of areas. Some believe that natural evolution is nothing more than a series of enhancements. Taking this example to the extreme, and arguing that technology is simply another enhancement, one could

¹⁰ Friedman, G. (2009). *The Next 100 Years: A Forecast For The 21st century*. New York: Doubleday.

suggest that the natural course of events could include a merger of human beings with technology as a readily accepted practice.¹¹

Some of these developments, at present, may not yet be at a stage of development to allow an officer to return to full duty. As these devices and therapies become more advanced, however, that could soon change. Building upon past successes, and utilizing new technologies yet to be considered, it is very plausible that severely injured officers of the future will be returned to full duty, perhaps even better than prior to their injury.

With this future state looming on the horizon, it is incumbent on the law enforcement profession to anticipate the needs and capabilities of officers returning from injuries treated by these medical and technological advances. In addition to officers returning to work, anticipating the needs and capabilities of applicants for employment that have such devices should also be considered. By recognizing the possibilities such employees bring to the table, we can begin aggressively moving our agencies into a position of being capable of more readily reintegrating (or integrating) them into our workforce.

Impact on Law Enforcement Workplace

These advances and others we have yet to consider will have a significant impact to law enforcement on many fronts. The profession will be impacted as these treatments and therapies become more advanced, refined and widespread. A positive outcome could be the return of a severely injured employee to productive, fulltime duty. Another outcome, however, may be unavoidable. In instances where stakeholders possess conflicting values and interests, litigation

¹¹ Allenby, B. and Daniel Sarewitz. (2011). *The Techno-Human Condition*. Cambridge, MA: MIT Press.

may be the likely outcome. That outcome could influence the manner in which we alter employment law to accommodate their return or entry into the profession.

Optimally, the profession will see highly trained and experienced employees remain with the organization even after sustaining serious injury. It is almost certain, however, there will be conflict in the employer/employee relationship over the costs of these treatments. The employer's interests will be focused on reducing the costs to rehabilitate an injured officer. The employee's interests (and likely those of their labor unions) will be to obtain the most up to date treatments to fully restore an employee to optimal health. The Ekso Bionics exoskeleton, for example, costs approximately \$130,000 for the suit alone. Rob Spence's optical implant/camera cost about \$30,000. Other devices and treatments are equally expensive, and don't include the medical treatments to provide them. These two conflicting interests about who will bear what costs almost guarantee conflict that will most likely be resolved in the courts.

Applicants for employment could also present challenges to a department's hiring standards and practices. If a rehabilitated officer can perform the duties of the assignment, why couldn't an applicant with similar therapies or devices? What reasonable accommodations could an agency be required to make to assimilate newly hired officers into the workforce? That question begs to be answered, and will only be decided when such challenges are heard in court.

There are additional considerations relevant to this topic. An officer equipped with an optical implant with camera capability may not be too far off. What rights does the employer have to any images captured by the device provided as treatment for an injury? Do those rights extend to an officer's off-duty hours if the images might have some nexus to the individual's employment (off-duty misconduct for example)? How might legal requests for Discovery be

handled by an officer with this type of device? The impacts from the advances in medicine are not limited to only those officers that are injured in the line of duty. Changes are coming that will impact virtually all of us, and the consequences of those impacts needs to be considered.

Potential Shift in Law Enforcement Hiring Practices

If the predictions of Allenby and Sarewitz come to pass, widespread acceptance of such “enhancements” might become common. As this population applies for positions in law enforcement, the agency’s hiring standards and practices could be challenged as capricious or biased if they are disqualified from competing for a position. As recently as 2011, the United States Air Force overturned their long standing policy of denying applicants to their aviator program who have had Laser In-Situ Keratomileusis (LASIK) surgery.¹² Just as LASIK is no longer a disqualifier for such positions, so too might other treatments and therapies soon be more widely accepted. What then happens to existing standards which may unfairly disqualify an applicant to a position in law enforcement?

Other applicants without such devices may feel they are at a disadvantage. Just as Oscar Pistorius was the subject of much criticism when he attempted to compete in the 2008 Summer Olympics, so too might applicants with other enhancements face criticism for having an unfair advantage. The challenge law enforcement may be facing in the future is not one of “reasonable accommodations” but to balance the equity of those with and without assistive devices. The profession must begin to consider such questions, or face the prospect of having such decisions forced upon us by legal decisions.

¹² <http://usmilitary.about.com/od/airforce/a/pilotlasik.htm>

There is much more to be considered than the prospect of a court decision related to hiring practices being forced upon the profession. The challenge of recruiting qualified applicants to law enforcement is one that is commonly seen in many fields with exacting standards. To the extent we can set aside our preconceived biases (toward these medical and technological advances) we mitigate the challenges of hiring qualified personnel into our ranks, and work to provide a workforce that can truly provide quality service to the communities we've sworn to protect.

Cost/Benefit Analysis for Municipalities

How can law enforcement prepare for these impending changes? In some cases, where there will be strong competing interests, perhaps little can be done. Already, officers today often find it challenging to get approval for medical treatments that are considered “experimental.” Doctors in California’s workers' compensation system are required to provide evidence-based medical treatment. That means they must choose treatments scientifically proven to cure or relieve work-related injuries and illnesses.¹³ How much more conflict over cost might there be when the treatment is even more outside the realm of what we consider “traditional” or proven remedies? The very real cost/benefit analysis of whether to provide expensive treatments, or to retire an officer and save costs will likely be a significant issue in the near future. Does the moral obligation to provide the most effective treatment for an officer exceed a municipality’s obligation to control medical costs? Each of us might have a very strong opinion on this topic, but it is almost certain that with such a broad number of stakeholders (taxpayers, employees and their unions, elected officials), those opinions will vary.

¹³ <http://www.dir.ca.gov/dwc/MTUS/MTUS.html>

Police Planning For “Bionic” Officers of Tomorrow

Law enforcement must begin to consider how some of these more advanced therapies and devices might be incorporated into the workplace of the future. When creating policies and procedures for our agency today, we need to consider how those policies will be integrated with the challenges of tomorrow. How will a policy on the use of recording evidence be applied to the “Eyeborg?” How might an officer with an exoskeleton be incorporated to handle a barricaded suspect? These policies will be relevant to both officers returning from injuries and to those newly hired.

Taking a more proactive stance meeting the challenges we face may be accomplished by actively seeking out these changes early. Taking a hard and critical look at our hiring standards and practices would put law enforcement on the ground floor of integrating employees with such “disabilities” into the workplace. This can only be successful through the partnership of city administration and human resources professionals. By bringing them into the discussion of how such personnel might be accommodated, we stand to gain their cooperation rather than bear the burden of their resistance.

The most obvious source of personnel who would help the profession usher in these changes sooner rather than later is the men and women of the armed forces, specifically those who have returned with significant injuries from armed conflict in Iraq and Afghanistan. These military veterans might be a good source of disciplined applicants which could be brought into the law enforcement ranks. To the extent that law enforcement is able to hire and incorporate them into the profession in spite of their disabilities, it would serve to reward those that made

significant sacrifices for their country, and help the law enforcement profession enter into the new world that is clearly looming on the horizon.

Conclusion

In the 1970's the concept of a merger of humans and technology was the stuff of science fiction. Today, well into the 21st century, we see that these ideas are more science, and less fiction. Already amazing developments in medicine and related fields are bringing about treatments and therapies that reduce suffering, mitigate the effects of crippling injuries, and even extend human lifespan. One can only wonder what future developments will bring. And not all of these innovations will be utilized as a means of overcoming serious injury. As our society begins to embrace and internalize (literally) technological advances, the likelihood of these advances entering the workplace increases substantially. It is incumbent upon law enforcement leaders to recognize what those coming changes might be, and to proactively seek ways to incorporate them into the workplace. There is little doubt that the Six Million Dollar Man is coming. The question is "Are we ready?"

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