
NONLETHAL OPTIONS: FAILINGS AND FUTURES
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Nonlethal Options
Failures and Futures

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I want to open by giving you a little bit of background. Most of what I'm going to focus on pertains to law enforcement, particularly non-lethal options for use in two major categories: mob riots and individual control. I would call this a grunt's perspective. I have no scientific degrees, but I have a lot of scars on my body from things that didn't work out just the way I had planned.

I had my first experience with a 1980 riot involving the Revolutionary Communist Worker's Party. That was my first exposure to what I would call a real, honest-to-goodness riot. The Revolutionary Communist Worker's Party crashed a black jazz concert during the Iranian hostage crisis. I can remember wading into mobs of people with all these placards—they were really substitute clubs; they'd nail them onto two-by-twos and they were beating us with them. Well, that was also my first lawsuit, which gave me a whole different perspective toward mob violence.

What I'd like to do is to provide one man's perspective. In fact, the subtitle of this presentation would probably be "The Emperor Has No Clothes." Like the little boy in the story, I'm just calling them like I see them.

An Idea Whose Time Has Come

- Useful for Interventions which Involve:
 - Urban Environments
 - Mixed Combatants and Civilians
 - Humanitarian Interventions - Peacekeeping, Peace Enforcement, Peace Making
- Strategic Implications
 - Lack of Justification to use Lethal Intervention provides impetus for Increased Provocation (Barking Dog Syndrome)

It has been estimated that more than 90 percent of law enforcement shootings occur within fifteen feet, take three to five seconds, and only involve two or three rounds fired. They are characterized by very close-in, short-range combat and by an almost instantaneous opportunity. I'll talk to you in a few minutes about snipers, because that's one of the other things we encounter.

Regarding peacekeeping and peace enforcement operations, what we're seeing right now is a blurring of war and crime. The military is rapidly becoming embroiled in peacekeeping and peacemaking, which is very similar in many respects to law enforcement, during which the mission never completely goes away. You never have this warm and fuzzy feeling that everything you did is right. And as we tell our people in the academy, when you're intervening between two combatants, there's 100 percent chance of making one of them mad.

On the other hand, law enforcement is also finding itself embroiled in military-like operations. During the 1992 riots, I was a watch and incident commander at Firestone Station. On the third day of the

riots, I had nine 60-man platoons of deputies that worked for me, and I had two rifle companies from the National Guard and two rifle companies from the Marine Corps in an area of 4.4 square miles. It was unlike anything I'd ever experienced. It has some strategic implications. What happens is that the lack of justification to use lethal intervention provides an impetus for increased provocation, what we in law enforcement nicknamed the "barking dog" syndrome. Dogs are not intimidated by threats. A policeman can pull his gun at a dog, but because the dog doesn't know what the gun does, he has no idea what is going to happen. As a result, we're usually forced to shoot dogs. There is no intermediate option. We don't have an ability to intervene with nonlethal force.

Intervention Strategies

- Proper Employment is Key to Success
- Nonlethal Options
 - Are more Humane
 - Allow more Control
 - Provide More Flexibility and Freedom to Act
 - Are Less Likely to Provoke Others
 - Are Less Likely to Raise Public Outcry
- Military focuses on Intervention — Law Enforcement focuses on Prevention

There is no magic bullet yet. We don't have anything guaranteed to stop an individual. Lethal options have never been 100 percent effective. On the other hand, there's an unreal expectation that non-lethal devices will never kill. We've shot several people who didn't make it. We've accidentally killed people with nonlethal devices.

Nonlethal options are more humane. It's very difficult to make a case for a humanitarian operation if the only means we have of imposing our will is by killing the people we're sent to protect. The situations we become involved in tend to be evolutionary in nature. It takes substantial provocation to be able to justify our use of lethal force. Nonlethals allow more control because we're allowed to intervene at an earlier stage in the process.

The same thing applies with the military. With nonlethals, we can prevent escalation beyond the point where the only means of enforcing our will is with lethal force. It allows more flexibility and it's less likely to provoke others. One of the things we've discovered is that mobs are not homogeneous. The mob mentality that everybody

describes exists, but not to the extent that everyone believes. There are different levels of commitment within a crowd. Many people are simply waiting to find out where the line is and how far they can push it. If we don't have the ability to intervene at an early enough stage, the line moves to a point beyond that we can live with. Then we're forced to take action.

Nonlethals are also less likely to raise public outcry. This is crucial, because we can win the battle and lose the war. In law enforcement, we're particularly sensitive to that, perhaps even hypersensitive, for the simple reason that we serve at the pleasure of the community. One of the things we tell people is that they don't get the amount of law enforcement they can afford, they get the amount they can tolerate. You can throw 100,000 policemen out there, and you can pay them and feed them, but if you don't let them do whatever they need to do, a lot of undesirable things are going to occur. That becomes crucial, because in some instances the public tolerance goes way down.

The effects of that intolerance can be long-lasting. Out of the 11,000 jobs that left L.A. after the 1992 riots, only 600 had returned two years later. Some people considered their insurance money as a gift. One of the people I talked to had been burned out in the 1965 riots and then had his new building insured for \$350,000. His comment was that he could never have sold it in the middle of Watts for that amount of money. The insurance money was a gift. So the riot actually gave him the opportunity to get out of L.A. If you go back down to 102nd and Grape right now, the burned-out buildings are still there from the 1965 Watts riots! If you go down there right now, even the stores that have been rebuilt have no public entrances on the street side. There are no windows on the street side. They have essentially been built as fortresses around their parking lots.

One of the things I have noticed is that the military tends to focus on intervention, whereas law enforcement focuses on prevention. I would like to illustrate this point with a story. Two young boys decide to go on a walk in the woods. It's a beautiful day, and boys being what they are, they're having a good time. Then they encounter this bear. The bear starts chasing them and they start running. As time passes, they're getting tired and the bear's getting closer. They look back and it's obvious this bear's pretty hungry and its intentions are

pretty obvious. Finally, one of the boys stops, takes off his day pack, and starts putting on running shoes.

His friend says, "What are you doing? You're *still* not going to be able to outrun the bear!"

His friend looks up and says, "I don't have to outrun the *bear!*"

One of these individuals saw the solution to his predicament as having to outrun the bear, while the other saw it as having to avoid being eaten by the bear. The one that had more precisely defined his situation had options available to him that the other one didn't have. Subtle differences in problem definition have a profound impact on problem resolution.

Nonlethal Weapons

- Defined by Intent — not Capability
- May not be Weapons at All!
 - May take the form of water, lights, or even smells
- Four classes of Nonlethal Weapons
 - Anti-Personnel (Most Well-Known)
 - Anti-Mobility
 - Area Delay or Denial
 - Anti-Infrastructure

For the first time in history we have a class of weapons that has been defined not by what it is capable of doing, but what the intended effects are. I'm a consultant for the U.S. Department of Justice on nonlethals; the only thing we could initially agree on is *not* to use the term "nonlethal." The term is virtually alien in the law enforcement world. When I was in Somalia, we had issues with foams, particularly sticky foam. I recall a conversation with our Staff Judge Advocate that went something like this:

"Gunner, what happens if you shoot somebody in the face?"

I said, "Sir?"

He says, "Will it stick their lips shut?"

I replied, "Yes, sir, it'll stick their lips shut."

He says, "Well, they'll die."

I said, "Yes, sir, and that's why *we* don't call it nonlethal."

There are four classes of nonlethal weapons. The first is anti-personnel. These are designed to stop an individual from doing something or to compel him to do something. Anti-mobility refers to being able to stop vehicles of some sort. Area delay or denial and anti-infrastructure are the last two. Anti-infrastructure devices attack entire systems such as communications, mass transit, and so forth. We have very little interest in anti-infrastructure in law enforcement. The one I'm going to spend the most time on is anti-personnel. In the Los Angeles Sheriff's Department our three big nonlethal areas are (1) intervention with nonlethal force, (2) stopping fleeing vehicles (which would be the equivalent of anti-mobility), and (3) detecting concealed weapons. These are the "bread and butter" of law enforcement functions.

Failures

- Nets
 - Single deployment, heavy, short-range, expensive, unable to separate individuals, requires clear background, easy to outmaneuver
- Foams
 - Messy, heavy, short-range, requires decontamination, severe logistical burden
- Both have limited applications and are Fiscal “Black Holes” — (No amount of Money will overcome Conceptual Flaws)

I need to warn you that I'm going to kill a few sacred cows here. I know that some of these projects have millions of dollars invested in them, but it's time to recognize that we've got about everything we're likely to get.

We've been messing around with nets since the 1970s when PCP was the drug of choice and we were desperate to find less lethal alternatives. The problem with nets is that they are conceptually flawed. You can only use them once. They are heavy and short-range. They don't work well inside buildings. You can't discriminate between people if they are standing next to each other. They don't work well if the guy is near vegetation like shrubs or trees. They're not very quick and a lot of times the target can outrun you. In addition, whoever employs the net is unarmed. He doesn't have the ability to defend himself. And it just goes on and on.

Another area of limited promise is foams. There may be some applications for foams, especially the rigid foams being developed by the Marine Corps Warfighting Lab, but against people they're messy,

heavy, short range, require decontamination, and they incur a severe logistical burden.

Well, my point is this: these things are fiscal black holes. It doesn't matter how much money you throw at them. You can change the color, size, and shape. You can do whatever you want, but when you are done, it's still a net and it still has all the conceptual problems of a net. It's the same thing with the foams.

In the L.A. Sheriff's Department we spend an average \$6.5 million every year just defending ourselves. We just lost a lawsuit in the spring of 1997. It was the largest payout in the history of law enforcement: \$23 million on a single lawsuit. So for the first time in history, it's cost-effective to go out and find effective nonlethal weapons. The other thing is, if we employ a nonlethal, and it fails and we end up killing the guy, we've sent an implicit message: we tried not to use lethal force, but the technology was just not there.

Futures of Nonlethal

- Potential for Near Term Success
- Strategic — Most promising is by Focusing on Equipment
 - Employment is Less Likely to be Delayed by Bio-Effects Concerns
 - Few Humanitarian Issues
- Tactical — Nerve Stimulation
 - Technically Difficult but Potentially Most Rewarding

There is potential for near-term success. The most promising area appears to be equipment. This is because there are almost no bio-effects to be concerned with. One of the things that continually causes problems is bio-effects, the human biological part of all this. Sometimes, even when we have a device that we know works, it will take a year to get it certified.

A tactical area that we're really interested in right now is nerve stimulation. It's technically challenging but potentially the most rewarding. To give you an example, if you hit your funny bone, your arm instantly goes numb. You don't have the ability to close your hand, it gets cold, and your entire attention, for a brief period of time, is focused on your body. When the pain goes away, there's virtually no harm; there's no bruise; there's nothing. If we had the ability to artificially recreate that effect, it would provide a tremendous tactical advantage.

The only thing we have that's even close right now is the Taser, and the only way we have to deliver it is with wires. As a result, we create

a medical casualty because we actually drive these probes right into the guy. We're looking at a device that uses glue and appears to have potential. They call it rhinoceros snot because they make it in San Diego right next to the zoo. This stuff is about as sticky as stuff can get, and it actually conducts through clothing.

The Search for the “Holy Grail”

- The “Magic Bullet”
 - Will yield a Change in Behavior
 - Will Employ a “Holistic” Approach
 - Synergy may be Created by Combining Technologies
 - May take the form of a Threat, particularly an Implied Threat
 - Social, Political and Cultural Implications cannot be ignored
 - The Object is not to fight — The Object is to Win!

Finding the best nonlethal device is like the search for the Holy Grail. That’s what a lot of these civil libertarian groups would have us find. I don’t see it ending anytime in the near future.

Two examples very quickly: snipers. A sniper’s center of gravity is the ability to remain anonymous, particularly in the city. But his critical vulnerability is that once he’s detected, he has no sustainability. Sooner or later we will win. We’re looking at two devices right now that will track snipers; one from the Naval Research Lab and one from a group called Trilon Technologies. If we have the ability to instantaneously locate and identify one of these guys, we may have the ability to greatly reduce the threat due to sniping. To give you an idea of the magnitude of the problem, consider the last study that I did right after the riots. I found that about 800 people were killed by gangs each year. Overall about 1,550 were murdered with guns. This is not all murders; this is just those involving guns. And about 4,000 people are shot each year that survive. I don’t even know, to be honest with you; I’d have to actually sit down and count all the partners

that I've had that have been shot, including some that have been killed.

Let's take a general, holistic look at nonlethals. People are comfort-seeking creatures. What happens if it's 12 degrees out there and you're using water? It becomes a nonlethal device all by itself. The other thing is, if it freezes onto the pavement, it becomes an anti-traction technology.

One of the things that happened while we were in Mogadishu was that the Somalis somehow got an idea that the lasers we had would sterilize them. That's an important thing when you're in the United States and you want to have a family, but in a Muslim culture, that's an extremely serious thing. Now lasers do a lot of things, but sterilizing people is not one of them. We never said they'd sterilize anyone, but it was to our advantage not to say they wouldn't. It became a force multiplier all by itself.

Nonlethals may take the form of a threat, particularly an implied threat. Let's be honest. A credible threat of lethal force is a nonlethal option. We've been holding people at gunpoint for as long as we've had guns. And I can tell you right now that it's pretty language independent. If you have a situation in which you don't have the ability to do a lot of things, when the gun comes out, everything becomes focused very quickly. The advantage of the threat is that usually what we *can* do and what we're *willing* to do lie pretty far apart. The vast majority of the times I pull my gun, I have no intention of using it. Now that goes against the grain of a lot of the civil libertarian people, but what happens is that I create the perception that I could use it, and therefore the guy has to go through a thought process that basically becomes a force multiplier all by itself.

Developmental Issues


- Long Term Goals
 - Success is the Biggest Obstacle
 - Bias for Kinetic Energy Munitions
 - Good Enough becomes the Enemy of Better
- Fully Mature Nonlethal Force will probably be judged by a Combination of Two Criteria
 - Will Provide Adequate Defense against Lethal Force
 - Crooks will use it along with, or instead of, Lethal Force

Now to long-term goals. We have a bias for kinetic energy weapons. Basically the things that we're doing, we're still doing with kinetic energy. We're just not hitting them hard enough to cause the injuries that we'd cause with lead. The good-enough becomes the enemy of better because if it's working at all, it's better than what we had before, and there's really not a lot of impetus to go out and find something better yet. Success, in a sense, has been our biggest obstacle to further advances.

So the fully mature nonlethal force is probably going to be judged by two criteria: (1) will it provide adequate defense against lethal force? Right now I can tell you that it does not. When we currently use nonlethal options, we always have a guy assigned to protect our nonlethal officer. And he has a lethal weapon. The guy with the fire extinguisher, the pepper spray, the gas, or whatever else doesn't have the ability to defend himself. (2) The other judge of nonlethal effectiveness will be whether the crooks use it. Pepper spray is great stuff. It's been the best thing that's happened to us for a long time. It's the most useful nonlethal device we've had. It's effective about 85 per-

cent of the time. Now if you do a robbery in California, you're going to get a five-year enhancement if you use a gun, without the possibility of probation or parole. So you have a two-year sentence for a robbery and five more years for gun use. That's a seven-year minimum. You could do the same thing with pepper spray and get only the two years. But the preferred weapons for robbery are still guns and knives. Why? Because they are so much more effective.

Public Expectations



- Criteria
 - Highly Portable
 - Discriminating
 - Instantaneous Effects
 - 100% Effective
 - 100% Reversible
 - 100% Safe
 - Environmentally Benign

Phaser
Star Trek
September 1966

This is really the public expectation. I did some research on this because this really is the public expectation. This first appeared on September 8, 1966, a Thursday night, some 33 years ago. Everything I've read estimates that any individual with access to a television in the last decade has some knowledge of this device. If I had just put the picture up or just used the sound, probably everyone in this room would have been able to identify it, describe it, and list everything that it does. This is the ideal. It has become the public expectation. The key point to remember is that this has *never existed*. But it has set the benchmark that we're expected to live up to. It's highly portable. It's discriminating. It's got instantaneous effects. It's 100 percent effective, 100 percent reversible, 100 percent safe, and environmentally benign. I was just on a radio program with Daryl Gates from the LAPD. He's got his own radio program now, and one of the comments that he made during the interview was that he'd always thought that one of the government organizations had one of these programs on the black side; law enforcement calls it the dark side; they were just holding it out because of some strategic reason to keep it secret. And I said, "Well sir, that's very possible. I don't have

access to everything, but do you really think the federal government has both the ability to do that and keep it a secret for all these years?"

Nonlethal Developmental Strategy

- None
 - All current Nonlethal Weapons and Programs are Tactical in Nature
 - Bias for Kinetic Munitions
 - Pain is OK — Trauma is Not!
- Training is all but nonexistent in Military
 - Nonlethal Employment Methods are Thoroughly Integrated into Law Enforcement training

Now, regarding a nonlethal strategy. First of all, there is none, at least on the law enforcement side, and as best as I can see, the same is true from the military side. All current nonlethal weapons and programs are tactical in nature, at least all the ones I've seen. As I've said, we still have this bias for kinetic energy. I gave a presentation at Johns Hopkins University and the Institute for Nonlethal Defense technologies at Penn State. One of the things I said was that we don't need the phaser. I mean, we'd like to get it, but recognizing that we're not going to get it, anything that you can do to cause the pain without the trauma is okay with us. Pain is OK, it's the trauma we're trying to avoid.

Training on nonlethals is all but nonexistent in the military. That's starting to change, but it hasn't changed to the extent that it has in law enforcement. In law enforcement, it's inculcated into everything that we do from the very beginning. That's critical because right now the key to success has been the application: when to do it and how long to do it, how much to apply and under what circumstances.

The Line Between Science and Fiction

- Go for the “Low Hanging Fruit”
 - Minimize Expense and Effort — Maximize Effectiveness
- The Standard is not Perfection — the Standard is the Alternative
 - Optimal Time Lapse is $< 3/4$ of a second
 - Optimal Distance for an Individual is >21 feet
 - Optimal Distance for a Mob is >40 yards

Go for the low-hanging fruit, the technologies that offer the most promise with the least amount of effort. Those that don't require a commitment to climb into the tree but are close enough to take now. The standard is *not* perfection. The standard is the alternative. We realize we're not going to get the phaser; what we're asking for is anything better than what we already have. And in some cases, that's not a lot to ask, because most of what we've got as far as nonlethals boils down to pepper spray and a baton. If you look at the nonlethal devices that are on the market today, you can boil them down into two broad categories: kinetic energy or chemical weapons. There's not a lot of directed energy. There's not a lot of other alternatives. There are three considerations regarding standards that I believe are fundamental. One, the optimal time lapse between the time that we fire a weapon and the time it becomes effective has to be less than $3/4$ of a second. That is about how long it takes for a human to process a stimulus and respond. It is why we have tissue damage when we touch a hot object before our brain can tell us to move our hand. If we don't have the ability to impact an individual in $3/4$ of a second, he can respond. As a result, we have to have a counter. In

fact, to the degree that we can't predict what his response is, we have to have more than one. The situation is complicated logarithmically.

The second thing: the optimal distance for application has to be greater than 21 feet. Twenty-one feet is crucial because that is the limit from which most people have the ability to close and kill you with an edged weapon. And that's why you will hear of recent incidents such as those in New York, Riverside County, and Florida where an excess of 40-some shots were fired at people with knives. What happens is this: even if you have the gun drawn, a guy can attack you and he can still kill you with the knife if he's within 21 feet. That's about 7 yards.

In law enforcement our longest range we qualify at is generally about 25 yards. The vast majority of our firearms engagements are at 7 or 8 yards—the length of a car or the inside of a room. In the Marine Corps, our minimum qualification range is 200 yards!

Finally, the optimal distance for a mob is greater than 40 yards, because they can usually throw things at you and hit you with rocks and bottles at that range. We call that the stand-off distance, the distance between our formations and the mob.

I don't know if you've noticed this or not, but in most cities that haven't been shot all up, there are not a lot of rocks. There are not a lot of bottles. So if you have a riot planned, you have to bring your own stuff. The Nazis are great for this. They bring golf balls and spark plugs. I bring this up because they can throw those about 60 yards. Anything better than 40 yards we're willing to live with, but 60 yards would really be our goal. So we need weapons that have the ability to impact people farther out than that.

Questions?

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Audience member: I'm from the MP school. We're working on a system to halt vehicles. There was a test done a couple weeks ago during which we stopped an 18-wheeler going about 35 miles an hour. I think that's pretty successful. Are you looking at that?

Heal: Yes, sir. We think it has great potential because it also locks the doors; the guy can't get out.

Same audience member: It seems from the tone of your presentation that you're kind of skeptical about nonlethal weapons. At the MP school, we are very excited about them. We're also in the preventative business. We think nonlethals include use of UAVs. Maybe a UAV could fly over the battlefield and shut down vehicle engines. We also have a machine gun grenade launcher. We're testing it now with a nonlethal munition that will take a target down at up to 60 yards. I think that'll be pretty effective.

Heal: Thank you, sir. I hope I didn't leave the impression with you that I was skeptical. I tend to be a pragmatist; I'll vouch for that. But no, we are also pretty excited about some of these things that are

happening. I guess if I had to summarize it, it's not skepticism but impatience.

Audience member: Based on your experience in Somalia and Haiti, do people misread our willingness to use force if we employ non-lethals?

Heal: I understand the implications of the question: are we sending a signal that we lack resolve or have a reticence to use force? I don't know if we're sending the signal, but some people are going to take it that way. That's why when you look at law enforcement we don't separate nonlethal force from lethal force. Part of the difficulty is that we can't predict the effectiveness of nonlethals as accurately as we would like. For example, let's say I'm going to employ a sponge grenade and someone asks me how will it work. I have to say, "Well that depends. What's he wearing? Where did you hit him? Was he under the influence of any drugs? How cold was it? Cold makes a big difference because some of these devices get harder when it gets cold. On the other hand, people wear heavier clothing when it's cold. As a result of that, there are a variety of factors that all have to be factored in. It doesn't lend itself very well to predicting how effective a weapon is going to be. One of the things we tell law enforcement is if it doesn't work the first time, repeat as necessary. So any device that shoots more than once is more appealing than a single-shot device.

Audience member: You were saying that directed energy is not an area that seems to have a lot of promise. We've heard things like acoustic weapons oft times have unintended physiological effects. Have you had any experience with acoustic or microwave systems?

Heal: Experience, no.

Same audience member: Actually my question was about acoustic weapons as a directed energy device. We've heard that there are some physiological side effects.

Heal: That's one of the systems that has captured the attention of the press. I must have said fifty times that they're not advanced enough so that we're going to be able to use them, at least not in the next five years. We focus on 60 months or less for reasons that I won't go into right now. They potentially have great promise. It

would be very exciting if they could make it work, but from everything I see they will not be ready in the next five years.