

21ST CENTURY TACTICS: FIGHTING IN THE FIFTH DIMENSION

By Sid Heal

When Luke Helder was arrested in Colorado, he had already planted 18 pipe bombs in mailboxes throughout the Midwest and was on his way to California with six more. He was caught after a 40-mile chase at speeds of over 100 miles per hour. Particularly interesting is that he was stopped and released by police no less than three times in the days immediately preceding his arrest. What is even more noteworthy, however, is that his eventual arrest resulted because he was targeted and attacked from the “fifth dimension.”

Tactical operations always unfold in at least four dimensions. The first three, length, width and height (and/or depth), make up the realm of space.¹ In fact, the older term “battlefield” has long been replaced in modern military discourse by the more accurate term “battlespace.” Loosely defined, battlespace is that domain or realm where an adversary can be acquired and engaged.

In the law enforcement community, battlespace can be readily understood in the stark reality of everyday examples. For instance, a criminal evading a tactical team by hiding in an attic has removed himself from being acquired and engaged by maneuvering behind the barrier of the ceiling and roof of a structure. He has removed himself from the team’s battlespace. In order to acquire and engage this criminal, tactical personnel must choose between entering the criminal’s battlespace (the attic) or forcing him into their own. Since entries into attics are particularly dangerous, tear gas is usually the preferred method to force the criminal into an area where he can be acquired and engaged. This concept plays out in innumerable ways depending upon the various circumstances making up each tactical situation.

The fourth dimension is time. Time is a “nonspace continuum” where events occur in an irreversible succession from the past through the present to the future. Time is a

separate and distinct dimension but a critical component of battlespace nonetheless. Knowing where a criminal is going to be, for instance, is only half of the equation. In order to engage a criminal, a tactical commander needs to know when the criminal will be there. Indisputably, there is no member of law enforcement who can’t recall an instance where the most diligent searches revealed that the location was correct, but the criminal had already left.

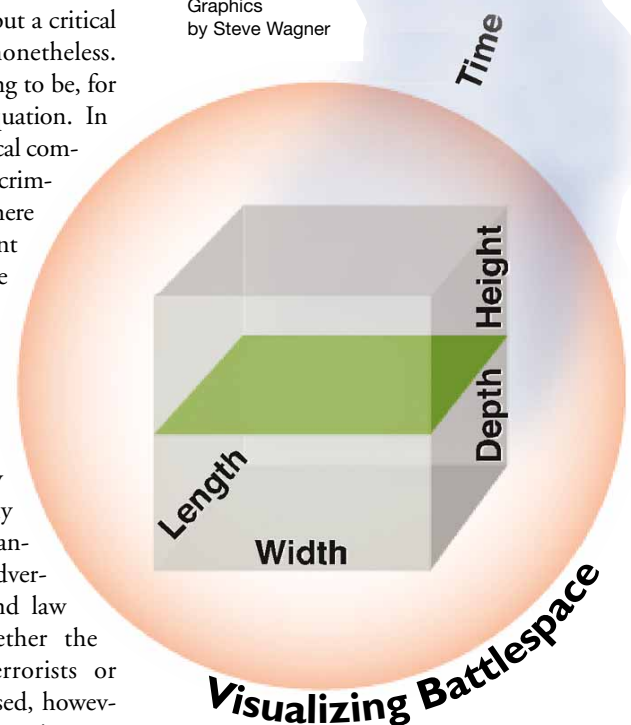
Until recent times, these four dimensions satisfactorily described battlespace sufficiently enough to provide a basis for planning, acquiring and engaging adversaries in support of military and law enforcement applications, whether the adversaries were criminals, terrorists or enemy soldiers. As time has passed, however, this understanding of battlespace is proving increasingly inadequate. Battlespace has acquired a new dimension.

THE FIFTH DIMENSION

The fifth dimension is cyberspace. While most people think of cyberspace² as the online world of computer networks, it is actually a much richer and deeper environment. It is better understood as a notional “information space.” In this realm, people interact with “humanspace”³ through the use of a myriad of devices besides computers, such as cell phones, two-way pagers, global positioning systems, personal digital assistants, and the like. Every time a person interacts with another person or machine through one of these devices, they are, in effect, moving through cyberspace.

All five dimensions interact with one another, with humans being the common “go between” or element. A business meeting, for example, involves both a place and a time. When cyberspace is added, conventional lim-

Graphics
by Steve Wagner



If it were possible to see battlespace, it might look something like this. Length, width and depth/height comprise the dimension of space. The fourth dimension is time. Together, space and time comprise humanspace. The fifth dimension is cyberspace.

itations are tremendously reduced or eliminated altogether because a physical location is no longer required and the limitations of time are greatly diminished. This can be readily conceptualized in a teleconference where members of a meeting at remote geographic locations participate via a closed-circuit television system. The physical location of the members is practically irrelevant, while the time to travel to a distant common locality is likewise minimized. They are operating and interacting in cyberspace.

The same concept applies in tactical operations and the arrest of Luke Helder is just one recent example. Helder had successfully been evading an intensive nation-

wide manhunt for days, but once he turned on his cell phone he was quickly located and arrested. Thus, although he was moving through humanspace, he was targeted from cyberspace.

It should also be understood that both adversaries need not be in the same battlespace. For example, a tactical team searching for a criminal hiding in a dark room is unable to acquire and engage the criminal. For all intents and purposes, the criminal is effectively outside the team's battlespace. When the criminal detects the team entering through an open door, however, he is capable of acquiring and engaging team members without their awareness. Thus, the criminal is outside the team's battlespace, but the team is inside the criminal's battlespace. The implications of this understanding can be profound, especially when dealing with terrorists. This is because a terrorist dressed in civilian clothing who is standing unnoticed a few feet away can be far more deadly than an entire enemy army conspicuously staged in another country. The army may be engaged by long-range bombers or missiles, but the terrorist is impervious to attack.

MANEUVERING IN FIVE-DIMENSIONAL BATTLESPACE

Once we recognize that battlespace is five-dimensional, it raises all kinds of interesting questions, not the least of which is how to maneuver through it. Maneuver is one of the "nine principles of war"⁴ and can be defined as the movement of troops and equipment to gain an advantage. Although maneuver takes on different forms in different dimensions, it transcends all five dimensions and encompasses the entire spectrum of battlespace.

Maneuver in space is so well known that little is to be gained by expounding on it. Suffice it to say that when in space, the maneuver elements are physical. They can be seen and felt. Examples include personnel, vehicles, supplies, and so forth. Moreover, maneuver in space is measured in distance and the early identification and control of key terrain takes on critical importance. Likewise, the arms used in space will also be physical, since it is superior firepower that will be required to achieve victory once the adversary can be acquired and engaged.⁵

While nearly everyone recognizes how maneuver applies in space, the more astute

will also recognize the critical aspect of time. Every tactical operation is the result of a unique and temporary set of circumstances. Unique, because each circumstance is dependent only upon those factors that are present at a particular time and place. Temporary, because an outcome of any kind affects the next set of circumstances in an irreversible succession.

Because tactical operations unfold in time as well as space, it becomes clear that they are in a constant and never-ending state of change. This dynamic nature makes them inherently time sensitive since they are easily altered by actions. While all tactical operations are dynamic, the problem is especially acute when criminals are involved because they include a competing interest that is actively attempting to exploit the circumstances for their own benefit. Consequently, when tactical operations involve criminals, they are not only time sensitive, they are also time competitive. The opponent who can most quickly exploit the circumstances to his own benefit gains an advantage. Conversely, time or opportunity neglected by one adversary can be exploited by the other. While the maneuver elements involving time are just as

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intrinsic as those in space, they are intangible. They exist only as a mental image. Examples include actions, events and circumstances. Accordingly, when maneuvering in time, the identification and exploitation of opportunity is the compelling objective.

IMPACT OF TEMPO

Maneuver in time is measured in speed. In tactical operations and competitive games, this is most often referred to as "tempo." Tempo refers to the speed, rhythm or rate of movement of something. In a tactical operation it describes the speed at which events are unfolding. The impact that tempo has on tactical operations can be easily illustrated by recalling the advantage of the "fast break" in basketball or the "breakaway" in hockey. The team which moves the fastest gains a considerable advantage. However, tempo is relative. A rapid tempo is only useful when compared with how fast an opponent can react because sheer speed is not the critical factor. It is only relevant in that what ever you do, you are doing it faster than your adversary.

Another important maneuver factor in time is density.⁶ When maneuvering in

space, density refers to the number of personnel, citizens, vehicles and the like, per unit of space. When maneuvering in time, density refers to the quantity of activities per unit of time. Like space, time can be congested and cumbersome in which to operate. This results in a condition called "overwhelmed by events," often identified by the abbreviation "OBE." Like traffic congestion in space, the OBE condition ensues because the human mind is incapable of endlessly processing an infinite amount of information. A large number of events requiring decisions occurring in close succession means there is less time to analyze the situations and alternatives and more anxiety over the most appropriate course of action. When maneuvering through a congested time period, it may be necessary to "clear the landscape" by removing distractions, demanding standard formats, insisting on recommendations by trusted subordinates or delaying nonessential decisions.

The arms necessary to gain and maintain the initiative in time are those that increase the speed and effectiveness of decisions and

actions. These include such things as standard formats for plans, reports and briefings to increase comprehension, vehicles and aircraft to expedite movement, and personal insight to be able to quickly recognize and exploit opportunities.

Maneuver in cyberspace requires a new paradigm, because the defining characteristic is information. Whether it is needed to locate a criminal hiding in a building or identify a terrorist concealed by anonymity, it is information that is necessary to acquire and effectively engage him. Consequently, the maneuver elements in cyberspace are data, often the "fruits" of devices designed to allow humans to interact in this dimension. Examples include the information obtained from cell phone conversations, pager messages, location reports from global positioning systems, or information gleaned from e-mail, Web sites and other on-line transactions. It also includes the information gleaned from sensors, such as thermal imaging devices and night vision goggles.

This interaction not only includes humans interacting with each other, but with machines. Examples include television

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tuners, garage door openers and remotely operated automobile alarms and locks. No law enforcement officer is likely to miss the tactical significance of being able to remotely open a garage door, lock a criminal out of his car or prevent him from watching a live TV broadcast. Understandably, maneuver in cyberspace is measured in knowledge, and the ability to acquire, deprive and manipulate information is critical; gaining understanding is the compelling objective.

BATTLESPACE = HUMANSPACE + CYBERSPACE

Together, the dimensions of space and time make up that portion of battlespace occupied by humans, and as such, is called "humanspace." Until recently, humanspace was the exclusive domain where combatants met and fought. When the dimension of cyberspace is added, however, combatants who remain in humanspace can be attacked with impunity from cyberspace. Luke Helder is only one of those who missed the lesson.

What separates humanspace from cyberspace is a "human sensing dimensional barrier."⁷ Depending upon the circumstances, this

barrier will take on different forms. When an adversary is barricaded inside a structure, for example, the barrier will be physical, but when concealed by darkness, fog or smoke, the barrier can be intangible. The barrier can also be notional, such as when an adversary is protected by anonymity. All that is necessary is that an adversary is unable to be acquired or engaged because he is outside human sensing capabilities. Understandably, cyberspace provides a refuge where weaker opponents can escape by hiding, becoming indistinguishable, or even just obscured so that the effort to identify and acquire them exceeds the value of the search. Certainly this last aspect is appealing to many crooks who understand that they need not hide indefinitely, only long enough for the tactical operation to end.

This barrier is a dynamic and contested frontier between opposing forces because terrorists and criminals will, quite understandably, take steps to avoid detection and thus remain in the safety of cyberspace, while authorities will attempt to identify and locate them to make them vulnerable to attack. Regardless of whether they are temporarily concealed by darkness or more securely pro-

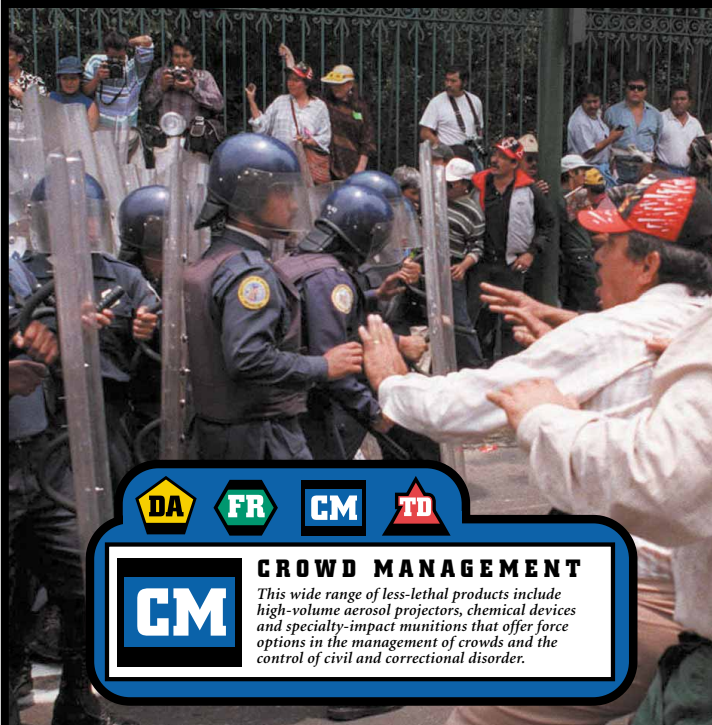
tected by anonymity, they are immune from attack as long as they remain undiscovered.

Once an adversary is detected, however, he can be acquired and engaged. Thus, they are drawn into humanspace. While the essential component necessary to achieve victory in humanspace is superior firepower, firearms and other similar weapons are completely useless in cyberspace. What is necessary to succeed in cyberspace are tools to gather, deprive or manipulate information. While computers most often are the first to come to mind, they are only one of a broad range of such devices that include night vision goggles, thermal imaging devices, see-through-the-wall radar, acoustic sensing devices, remote video cameras, biometric technologies,⁸ and so forth.

DOMINATING CYBERSPACE

Understanding that battlespace is five-dimensional fundamentally alters thinking and planning for tactical operations. First, recognizing that cyberspace is an inherent component of battlespace becomes a tactical imperative. Any commander who chooses to fight only in humanspace can expect to be

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flanked and attacked from cyberspace. This is particularly the case with terrorists who cannot win a stand up fight and must attack and return to the safety of cyberspace in order to survive, much less succeed.

Second, retooling and not rearming will be necessary. Sensors, not firearms, will be required to identify and locate criminals and terrorists hiding outside human sensing capabilities. These will take on countless forms and provide any number of advantages. On the tactical level, devices that detect explosives and weapons will tremendously diminish a criminal's ability to commit robberies or a terrorist's ability to emplace and secrete bombs. On the strategic level, biometric devices will identify terrorists and criminals and remove them from the "sanctuary of anonymity."

Third, the rules of engagement in cyberspace are not based on the appropriateness of force but the invasion of privacy. Technology already provides an ability to search electronically for contraband and weapons without the knowledge of the person being searched. So, while a "see-through-the-wall" radar or audio interception device may be easy to justify during a hostage recovery operation, screams of protest erupt when biometric devices are suggested to scan and identify terrorists among passengers arriving from another country.

Fourth, the realm of cyberspace is far more expansive than the finite limitations of space and time in humanspace. The volume of information is seemingly unfathomable. Consequently, tactics in cyberspace will not focus on the movement of personnel or equipment, but the ability to gain understanding and knowledge from a myriad of data. Information will need to be analyzed and appraised to determine meaning, relevance and significance before being incorporated into the decision-making process. Accordingly, the most effective strategies will provide an ability to quickly sort the relevant from the volume.

Fifth, cherished methods and practices will be challenged. Nowhere will this be more prominent than in the command and control function. Currently, tactical decision-making is accomplished by placing people with expertise and authority in a central location, generically referred to as a "command post," and then providing them information to make decisions. The major problem with this method is that the authority and expertise to make effective decisions lies at the command post, while the greater situational awareness⁹

remains at the crime scene. Additionally, complex tactical situations, such as those involving chemical, biological or radiological threats, will require the advice of experts seldom affiliated with tactical organizations. Instead, college professors, scientists and engineers located at distant universities and research facilities will possess the essential information. Incorporating their expertise into the decision-making process becomes a compelling need for a satisfactory resolution.

These problems are greatly attenuated when a "cyber-command post" is created. Much like a teleconference, a cyber-command post does not rely on a physical location, but incorporates technology to provide the insight of subject matter experts wherever they are through the use of remote video viewing, the World Wide Web, e-mail, cell phones, and the like. Thus, the tactical decision-making process is immensely enriched with knowledge that far exceeds the capabilities of any tactical organization alone.

Well over a century ago, American Civil War Gen. Ulysses S. Grant said, "The laws of successful war in one generation would ensure defeat in another." Whether it is the war on crime or the war on terrorism, the surest way to lose a war is to use the last one as the model for the next one. While the scope of the implications of five-dimensional battlespace are staggering, there is really only one underlying requirement for success. That is to identify and locate criminals and terrorists operating in cyberspace to enable them to be attacked in humanspace. No amount of additional firepower will even the odds, because in cyberspace firepower is measured in megabytes. ■

FOOTNOTES

1. Space may be simply defined as a three-dimensional field in which matter exists.
2. "Cyberspace" was coined by science fiction author William Gibson, in his book *Neuromancer*, published in 1984.
3. "Humanspace" is used by Dr. Robert Bunker, a counter-terrorism and nonlethal weapons consultant, to describe all dimensions where humans live and interact. He defines it as "That aspect of battlespace composed of the traditional physical dimension in which humans and their machines move and fight." Consequently, humanspace will encompass both space and time.
4. The United States Army first published its discussion of these principles in 1921, but they were taken from the works of British Major

General J.F.C. Fuller, who originally published them in 1912. Fuller's work sets forth in concise terms, nine interacting and related factors that have stood the test of analysis, experimentation and practice and are now part of nearly every Western military course of study as the "Nine Principles of War."

5. It should be understood that "superior firepower" will include nonlethal options, since killing the adversary may not be necessary to defeat him. This is especially the case in law enforcement operations.
6. For more information on density in time, the author highly recommends the book, "Heavy Matter, Urban Operations' Density of Challenges," by Russell W. Glenn, RAND Corporation, Santa Monica, CA, 2000 (310-451-6915 or order@rand.org)
7. Concept and definition taken from "Advanced Battlespace and Cybermaneuver Concepts: Implications for Force XXI," by Dr. Robert J. Bunker, published in *Parameters*, Autumn 1996, pp. 108-120
8. Biometric technologies are those that identify and compare the physical characteristics and personal traits of people to distinguish them from others. Examples include facial recognition, retinal scans, fingerprints, voiceprints, DNA, and many others.
9. Situational awareness is a concept that describes a person's knowledge and understanding of the circumstances, surroundings, and influences with regard to an unfolding situation.

ABOUT THE AUTHOR



Charles "Sid" Heal has nearly 28 years in law enforcement and is a captain in the Los Angeles Sheriff's Department, currently assigned as the unit commander of the Special Enforcement Bureau. He is a court-recognized expert in law enforcement special operations and emergency management and has authored two books and numerous articles in his field. He is also nearing the end of his career in the USMCR, where he has nearly 34 years of experience, including service in more than 20 countries and three combat tours.

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