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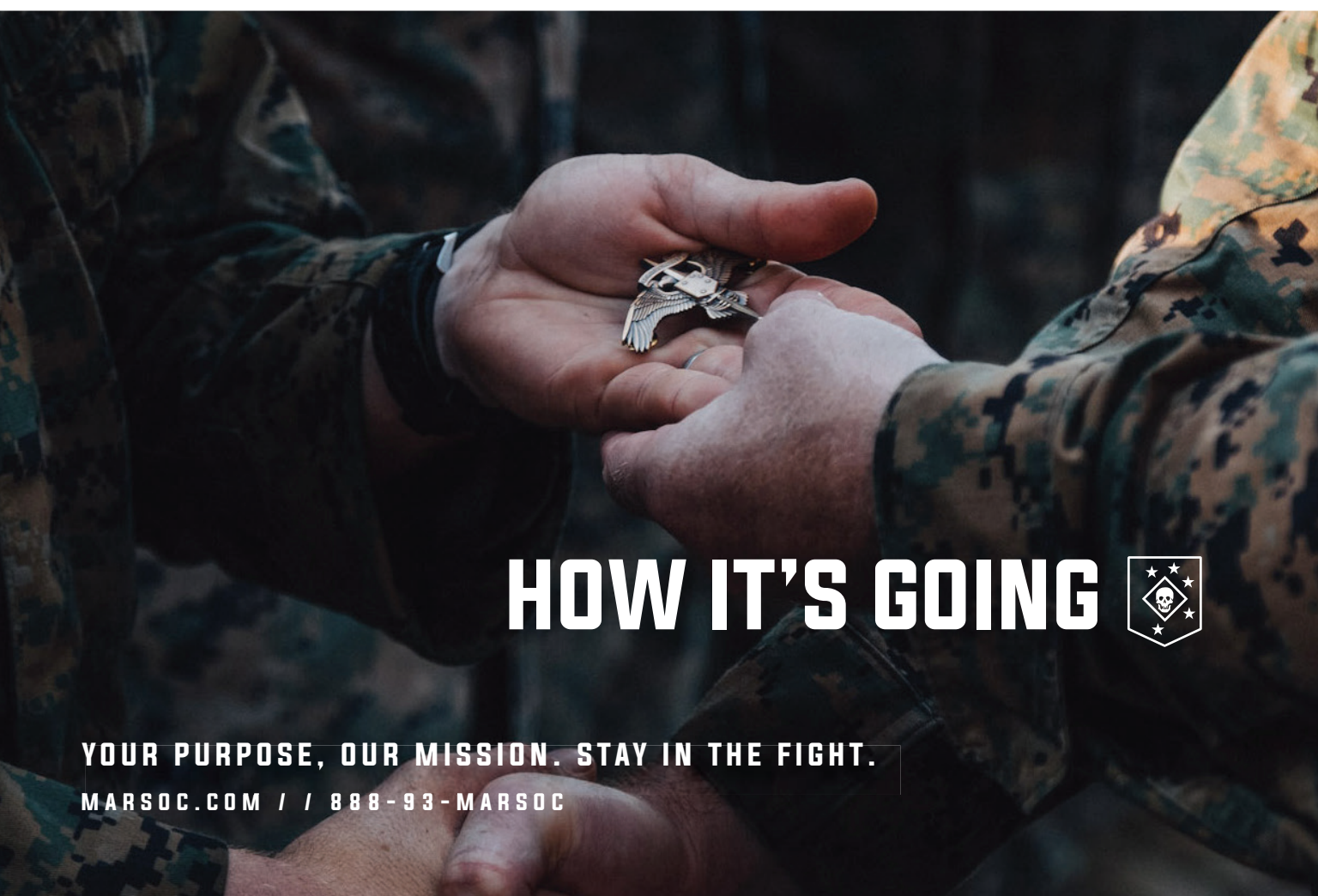


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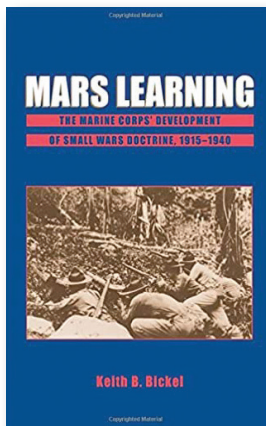
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2021 saw Marine Corps experimentation with anti-ship missiles and unmanned ground vehicles. (Photo by LCpl Luke Cohen.)

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APRIL 2022

Editorial: C4 and the Information Environment

The art and science of command and control and operations in the information environment provide the focus of this month's edition. Recognizing that this complex and multi-faceted subject ranges across the means, methods, organization, and skills involved in employing and controlling the electromagnetic spectrum to communicate, direct, and monitor friendly forces while tracking, influencing and disrupting or denying an adversary's use of that environment and continuously protecting information from that adversary. We must also recognize that the subject includes information itself: public information and classified information; our information and our adversary or competitor's information; factual information, and deliberately ambiguous, deceptive or false information; and information we decide to reveal and that which we seek to conceal. The demands of operating in this dynamic and highly competitive domain may be the greatest change in the character of war today. The Deputy Commandant for Information, LtGen Matthew G. Glavy is the Corps' lead agent in this arena and this month DC-I has provided both a personal letter outlining the challenges of OIE and the content of this edition and an article titled "The Information Warfighting Function." Then starting on page twelve, a series of eleven articles address varied aspects of the of that warfighting function. Highlights include "Our Belleau Wood Moment" by Maj Audrey F. Callanan and Col Jordan D. Walzer on page 12, "MCDP 8, Information" Mr. Eric X. Schaner on page 20, and "Public Affairs and OIE" by Col Kelly Frushour and Col Elizabeth B. Mathias on page 25. On the more technical "science" side of the subject you will find "Network Technology" by CIV Michael Cirillo on page 29, "Quantum Technology" by Capt Caleb A. Lawrence on page 41, and "Zero-Trust Networks" by LtCol Patrick Seipel on page 51.

Outside this focus area, we have included articles on a wide variety of today's "trending topics" including talent management, force fitness, and maneuver warfare. Noteworthy articles in these areas include on "Cyber Advisors" by CWO5 James Jabinal on page 75, "EKGs Necessary to Prevent Marine Deaths" by GySgt Andrew Guthart on page 54, and "Speed as a Weapon" by Capt Michael A. Hanson on page 78.

Of special note, we continue our ongoing series the "Maneuverist Papers" on page 102 with "Expeditionary Advanced Base Operations" by "Marinus." Here the author argues that the unprecedented changes detailed in the *Tentative Manual for EABO* and *Force Design 2030* will render *MCDP 1, Warfighting*, obsolete and could even hazard the Corps' established role in national defense. As the Corps' professional journal, we must facilitate and encourage this intellectual discourse. Are we having the right argument? Or to provide Stand-in Forces and remain the Nation's force-in-readiness recognized as a credible deterrent against an adversary with the will and audacity to operate in the "gray zones" of influence, intimidation, and brinkmanship combined with the capabilities to deny access and render our existing "stand-off" platforms and capabilities irrelevant, what concepts, capabilities, and doctrine does the Corps need to modernize and meet the challenges of the current operating environment? This discussion and debate are essential to the intellectual honesty and future health of our Corps. All are invited to share their thoughts and constructive comments both in the *Gazette* as articles and letters to the editor, and online on the *Gazette* Blog: <https://mca-marines.org/blog/>.

Christopher Woodbridge

MCA President and CEO, LtGen Charles G. Chiarotti, USMC(RET); VP Foundation Operations, Col Tim Mundy, USMC(RET); VP Strategic Communications, Retail Operations & Editor, *Leatherneck* magazine, Col Mary H. Reinwald, USMC(RET); VP Professional Development, Publisher & Editor Marine Corps Gazette, Col Christopher Woodbridge, USMC(RET); VP Corporate Sponsorships, Events & Advertising, Ms. LeeAnn Mitchell.

Maneuverist Paper No. 18

■ Marinus asks the question whether maneuver warfare has ever been institutionalized in the Marine Corps. I am currently the Marine for Life (M4L) Program Central Region Network Coordinator based in the Dallas-Fort Worth-area. As such, I lead/supervise over twenty Reserve officers/staff non-commissioned officers who are M4L representatives in a fourteen-state area that assist Marines coming off of active duty to successfully transition back to civilian life by connecting them to employment and educational resources and assisting them in obtaining gainful employment. My introduction to maneuver warfare was coming across the *Maneuver Warfare*

... maneuver warfare has not been institutionalized in the Marine Corps.

Handbook in the Iowa State University Library in 1985 and reading it. It transformed my understanding of warfare at the tactical level. As a young infantry officer in the late 1980s, I followed with great interest Gen Gray's introduction of maneuver warfare as the Marine Corps' official tactical doctrine with the publication of *FMFM 1* (now *MCDP 1*). I have closely followed the current debate about maneuver warfare in the *Gazette*.

Whenever I interview an officer to be a potential M4L representative in my region, I always ask, "What is the tactical doctrine of the Marine Corps?" (I have also asked current/former reps the same question.) In the past two years, only one out of twenty officers have answered "maneuver warfare." I have had two officers answer, "*MCDP 1*"; everyone else has no answer. I then ask, "In your opinion, what is the essence of maneuver warfare?" The only answer that has been even remotely close is "moving fast," said with a question mark. This includes

many officers with combat deployments as company-grade officers. I then always ask, "You were taught maneuver warfare at TBS, correct?" Everyone answers in the affirmative. After having reminded them that maneuver warfare is our tactical doctrine, they always recall it being taught at TBS.

When that many Marine Offices do not know the name of our tactical doctrine, maneuver warfare has *not* been institutionalized in the Marine Corps.

Maj Skip Crawley, USMCR (Ret)

Flexible Working Hours

■ In response to the December 2021 Observation Post, "Flexible Working Hours," great idea! We can now eliminate the generous every national holiday 96-hour weekend passes and scale back the 30-day annual leave to a more realistic leave plan based on time in service—mirrored to our civilian colleagues leave plans. We can also eliminate the twenty-year military retirement—requiring service members to remain in service until a minimum retirement age more commensurate with our civilian colleagues, which are mid-to-late 50s to early

... the military is already structured to be flexible to meet the mission ...

60s with a 30-year minimum time in service requirement. All the above-mentioned changes will be possible because of a more flexible work schedule. I say the above "tongue in cheek" because the military is already structured to be flexible to meet the mission. Unfortunately, the military mission does not mirror our civilian colleagues eight-hour daily work schedule. The military compensates for that difference with time off incentives to compensate for rigorous 24-hour duty and operational/field stints and a retirement system unrivaled by our civilian

colleagues. The author of the article also several times refers to Marines as employees and leaders as managers. I argue if we all wanted to be "employees and managers" with commensurate flexible work hour benefits, we would not have joined the Marine Corps. Gunny, be careful what you ask for because you may get it with unintended consequences.

Capt D.A. Brown (Ret)

Patrol Craft for Marines

■ C6FLT had a division of five Navy Patrol Craft stationed in Naples, Italy, when I was the executive officer and commanding officer of Marine Barracks-Naples from 1969–1972. They were a strategic presence and ideal for duty in the MED. Their range was somewhat limited, but they had enough friendly places to get refueled. They were berthed at the Main Downtown Pier, always departed mid-morning in formation, and were known as the "Swash-Bucklers." The Navy's divestiture of MkVI Patrol Boats is not a bargain for the Marine Corps—especially if they are free. This class of Patrol Craft has a similar range; the Western Pacific has fewer pit stops and greater distances. The Marine Corps does not need the logistics of training and maintaining Patrol Boats. The Marine Corps does not need the Navy's Patrol Craft problems!

LtCol Mike Janay (Ret)

On Decision Making

■ In "On Decision Making," Marinus chronicles the never-ending tension within the Marine Corps and the other Services between the proponents of Rational Choice Theory (RCT) and those advocating Recognition-Primed (RPD) or intuitive, experienced-based, decision making. The challenges with Marinus' arguments are two-fold. First, suggesting the options, RCT or RPD, are separate in the Marine Corps' approach to decision making, the Marine Corps Planning Process (MCPP) is a false dichotomy. By design and in practical application, the MCPP is both RCT and RPD—a

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Letters may be e-mailed to gazette@mca-marines.org. Written letters are generally published three months after the article appeared.

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blended approach. Secondly, something always overlooked in these discussions is that the MCPP accomplishes significantly more than facilitating decision making for Marine Corps commanders maneuvering large organizations.

The MCPP is designed specifically to encourage commanders to leverage their experience and exercise RPD in decision making. Commanders draw from their background and intuition during problem framing, when providing course of action (COA) development guidance, during COA development, and throughout wargaming. MCPP is a merger of the two decision making approaches, RCT and RPD. There are no constraints in the MCPP on the commander's interaction with the planning team or in how the commander's decisions are informed and made. The more commander interaction and collaboration, the better. The planning team's only role is to gather, manage, and organize information to assist the commander's decision making.

While there is some analytics performed during the MCPP, such as force ratio assessments and weighted scoring of COAs during COA evaluation and assessment, the analysis simply provides data points for the commander's consideration. Analytics do not drive decisions unless the commander finds them compelling. In truth, there is much more art than analytical science to the MCPP. The MCPP guides planners in an organized approach to gather, consider, and validate to the extent possible all information available. Many times, RPD-informed COAs that appear the obvious solution are invalidated under the MCPP prescribed, scrutiny of wargaming.

There is no doubt the full-blown MCPP is ponderous. For this reason, in practical application, the process is always tailored to reflect the demands of the situation. Time constraints, staff experience, problem complexity, and the experience of the commander influence the conduct and approach to planning. RPD models rest heavily on the assumption of experienced commanders

and this assumption is not always valid. The MCPP can be flexibly tailored to accommodate highly experienced commanders while supporting those with less insight into the current situation by presenting well-organized information. The commander "drives" the MCPP to meet his needs; the purpose of the MCPP is always to facilitate the commander's decision making.

The MCPP has advantages that cannot simply be discarded ...

Marinus does note a real benefit of Marine Corps Doctrinal Publication (MCDP) is the learning that occurs through the planning process. Developing COAs, staff estimates, building intelligence products, and Red Team COAs is invaluable in developing situational awareness for both the commander and the staff. The situational awareness built during extensive planning in 2002–03 for Operation IRAQI FREEDOM I meant that orders issued subsequent to crossing the line of departure were developed with great speed. The planning team relied upon the extensive knowledge of the situation gained during the planning process to increase the tempo of the commander's decision making and as important, in directing the actions of the major subordinate commands.

To be practical, Marines can be trained to the MCPP. Other approaches, like operational design, are not nearly as understandable and assessable. There are no approaches developed to implement operational design that result in the production of operational orders. Operational design culminates in problem framing. The MCPP speeds orders development as the products that become the base order, annexes, and appendices are created throughout the process. This results in

quicker operational tempo and decision advantage relative to the enemy.

"Problem Framing," in *MCWP 5-1* that replaced "Mission Analysis" from prior versions, is complex and difficult to internalize. It is hard to make an argument that problem framing provides better solutions than did the more intellectually assessable and organized approach of mission analysis. During the closing days of the Afghanistan withdrawal operations, the press discovered "spaghetti charts," the Gordian knot product of design thinking of U.S. forces about the Afghan problem. The press and the American people were puzzled by these diagrams that were simultaneously complex and seemingly meaningless. Does disorganize thinking like this really result in problem understanding and actionable solutions for Marine Corps commanders operating in the chaos of war?

There is plenty of room and flexibility in the MCDP for RPD, experience-based solutions from commanders. The process is really both. The MCPP has advantages that cannot simply be discarded and replaced with commander and staff discourse. The adherents of RCT, in the Marine Corps case the MCDP, are simultaneously the strongest advocates for RPD because the freedom for the commander to leverage experience and intuition are integral to the decision making approach and process. The MCPP remains relevant until perhaps it can be enhanced through artificial intelligence. The codified Marine Corps' approach to decision making, the MCPP, has hardly been "eviscerated."

Alex Vohr

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SCHEDULE

Tuesday, 10 May, Day One – Walter E. Washington Convention Center, Washington, DC

0945 – 1000 Opening Ceremony – Main Entrance to Exhibit Hall
1000 Expo Hall Open & Presentation Schedule Initiated
1630 Expo Hall Close
1830 – 1930 Grand Banquet Reception – Marriott Marquis, Washington, DC (901 Massachusetts Ave, NW)
1930 – 2130 Grand Banquet (CMC GOH)

Wednesday, 11 May, Day Two – Walter E. Washington Convention Center, Washington, DC

0830 – 1000 Marine Corps League Awards Ceremony & Leadership Breakfast
1000 Expo Hall Open & Presentation Schedule Initiated
1200 - 1330 MDM Personal Financial Planning Lunch Hosted by MCA
1630 Expo Hall Close

Thursday, 12 May, Day Three – Walter E. Washington Convention Center, Washington, DC

1000 Expo Hall Open & Presentation Schedule Initiated
1200 - 1400 MDM Career Transition Lunch Hosted by MCA
1400 - 1500 Marine Zone Semper Fi Mixer
1530 Expo Hall Close, End of Presentation Schedule & End of show



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3 February 2022

Marines and Sailors,

Current operations demonstrate the critical role of information as a warfighting function. The side that can gain and maintain an advantage to generate, preserve, deny, or project information better and faster than their opponent will have the edge in systems overmatch, narrative advantage, and force resiliency. We see it playing out in realtime.

Our strategic competitors are very competent in the information environment but so are our Marines. I witnessed, first-hand, Marines in action within our MIGs, MARFORCYBER, and the MEUs. I am often asked, “Why is the Marine Corps so focused on the information environment?” and I always respond, “Because our Marines are good at it.” There is a more eloquent answer, but you get my point. Anytime we can challenge a Marine to do things that require insight, imagination, and innovation and then empower them to act within the requisite legal and lawful authorities, we are playing to the “center of gravity of our Corps”: our Marines.

None of this is possible without the individual Marine. The Commandant’s *Talent Management 2030* vision will be the foundation for the continued success of our Corps in the information environment. We have eye-watering talent within our ranks. The Commandant’s plan formally stands up military occupational specialties for space and influence operations in addition to the current build of cyberspace occupational field. The 17xx career track seeks to create, empower, and retain Marine Corps expertise for cyber, space, and influence operations. These Marines will be the difference between success and failure in the information environment.

The *Commandant’s Force Design 2030* underscores the value in prioritizing resources. My team is dedicated to delivering information capabilities and resources to support force design. Efforts underway include network modernization to provide seamless integration between the enterprise and deployed warfighter. Network modernization will allow Marines to rapidly close kill webs and enable the employment of enterprise artificial intelligence and machine learning capabilities to analyze data from the tactical edge and facilitate faster, data-driven decision making. With a modernized network, the Corps provides the placement and access to contested information environments required to gain, maintain, and hold targets at risk as the Stand-in Force.

The recently released *A Concept for Stand-in Forces* focuses on the Marine Corps’ value in supporting the joint force by winning the recon and counter-recon battle. The Marine Corps is pursuing a balanced mix of intelligence capabilities that will enable the naval force’s contribution to integrated deterrence. We will accomplish this by enabling the fleet to sense and make sense of the battlespace faster than our adversaries while operating at the tactical edge, within our adversary’s weapons engagement zone. The Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise exist to provide the personnel, information, processes, standards, formations, and capabilities that will enable the Naval Expeditionary Force, the joint force, and our coalition partners to accomplish these tasks, and support decision making across the competition continuum.

I want to thank the *Marine Corps Gazette* for giving a voice in critical dialogues for our Marines in and out of uniform on the important issues we face. Change is hard. No one knows that better than a CH-46 pilot recreating himself in the information environment.

Matthew G. Glavy
Lieutenant General, U.S. Marine Corps
Deputy Commandant for Information

The Information Warfighting Function

How stand-in-forces create and exploit information advantages

by LtGen Matthew G. Glavy

Marines now have a clearer understanding of how they are likely to operate against the pacing threat—and other near-peer adversaries who can create contested areas—because of the recent release of *A Concept for Stand-in Forces*. In the document’s 23 pages of text (not including the foreword), the word “information” is used 27 times in various contexts but primarily in reference to operations in the information environment. *MCDP 8, Information*, currently nearing its final draft, was written in parallel with the development of the Stand-in Forces (SIF) concept. The two lines of thought influence each other. *MCDP 8* describes our newest warfighting function and outlines how Marines can utilize it to create an advantage in the context of our maneuver warfare philosophy. The SIF concept leverages these ideas and explains how the information warfighting function helps Marines using the concept to accomplish their mission. This article dives deeper into this relationship and provides additional insight into how information and Marines seeking information advantages, as broadly described in *MCDP 8*, can help turn SIF from a concept into a reality.

Creating Information Advantage

Through the information warfighting function, Marines create and exploit information advantages by generating, preserving, denying, and projecting information more effectively than an opponent. There are three types of information advantages Marines seek as a means to accomplishing objectives and ultimately imposing our will: *systems overmatch*, *prevailing narrative*, and

>LtGen Glavy is the Deputy Commandant for Information.

force resiliency. These advantages are described in detail in *MCDP 8*. Figure 1 illustrates a way to visualize the steps Marines take to create information advantages in any warfighting domain. The figure is shaped like a pyramid to illustrate the cumulative effort this requires. As with all warfighting functions, the pyramid’s foundation rests on the competence found in those who demonstrate capability and excellence in their craft—in this case, Marines educated and trained to perform effectively in every warfighting domain and the information environment. Intuitively, Marines understand that competence is necessary for *any* warfighting function if we are to include it in our combined arms approach to operations. Thus, while education and training are es-

sential to developing competent skills in one’s MOS, appropriate education and training are also necessary for all Marines who seek to integrate information into combined arms plans.

Demonstrating such competence unlocks the next two levels of the pyramid, Authorities and Approvals. By “authorities,” we mean the legal power given to particular commanders to take action in specified ways—in this case, the commander who can legally decide to take action in the information environment. “Approvals” means the commander with the power to act gives his permission for a designated course of action to proceed. Marine commanders performing any type of operation, including SIF operations, may receive authority to conduct operations in the information environment; for example, this authority may be provided in an execute order. More frequently, these types of authorities reside at a higher level in the chain of command. Regardless of where the authority lies, approval to

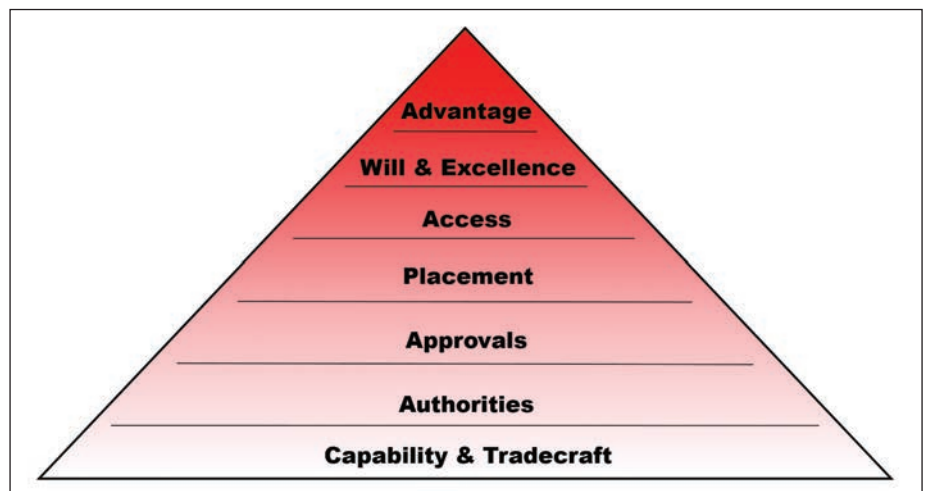


Figure 1. The Information Advantage Pyramid. (Figure provided by author.)

perform any operation using information capabilities must be obtained from the commander with the legal power to act. Approval can be given in a variety of ways, ranging from permission on a case-by-case basis to pre-approval to act if a specified trigger is met. Note that such approval can be given to subordinate commanders who do not have the authority to take action on their own; they can still operate effectively in the information environment so long as they, and their staffs, understand how to secure approval for their desired course of action. Understanding the nuances of authorities and approvals is essential for Marines performing future stand-in force missions.

“Placement” in the context of information advantages means putting something or someone into a relevant physical or virtual position. One joint definition that illustrates this relevance is “an individual’s proximity to information of intelligence value.” Placement is a location that makes something possible; Marines with good placement increase the chances they will be *in the right place at the right time*. “Access” refers to any action to enter a targeted system to collect intelligence or hold the system at risk. It can be gained in a variety of ways depending on the characteristics of the targeted system. For example, hackers gain access to a targeted computer system through its connection to the internet, which is what happened in the widely reported hack of Sony Pictures in 2014.¹ Access can also be gained through the electromagnetic spectrum. A good example of this is the (in)famous 2015 event when researchers demonstrated their ability to take control of a Jeep Cherokee’s operating system by using a cellular telephone network, which is a radio wave transmitter and receiver system, to enter the vehicle’s wi-fi system—another radio wave transmitter/receiver.² Access was obtained to the operating system through the vehicle’s wi-fi receiver antenna in this example.

To achieve an information advantage, we also need “Will & Excellence.” To understand this level of the pyramid we turn to our warfighting philosophy found in *MCDP 1, Warfighting*. To ex-

ecute any of the warfighting functions effectively requires determination, while the object in war is to impose our will on our enemy.³ The nature of war does not change, even though the Marine Corps added an additional warfighting function to our lexicon. The conduct of operations requires resolve regardless of the domain or domains through which we act. To truly achieve an advantage against an opponent requires creativity to produce courses of action that pit strengths against weaknesses, which is an apt description of excellence.

Our foundational philosophy found in *Warfighting* instructs us that “the essence of maneuver is taking action to generate and exploit some kind of advantage” over our opponent. Advantages can be generated in any domain and “may be psychological, technological, or temporal as well as spatial.” When we create several different advantages and apply them so they work together, we produce combined-arms effects. Cross-domain advantages, to include information-based advantages, are simply a particular kind of combined arms warfare. The pyramid in Figure 1 illustrates the steps necessary to create advantages in the information environment, which can then be applied to help us impose our will.

Information Advantages and SIF

SIFs are designed to operate across the competition continuum within a contested area as the leading edge of a maritime defense-in-depth to intentionally disrupt the plans of a potential or actual adversary. These forces deter by integrating their activities with other elements of national power (economic, diplomatic, and informational), and with the activities of allies and partners, to impose costs on rivals who want to use ways and means below the violence threshold to achieve their goals. SIF’s enduring function is to help the fleet and joint force win the reconnaissance and counter-reconnaissance battle at every point on the competition continuum. When directed, SIF conduct sea denial in support of fleet operations, especially near maritime chokepoints. SIF can perform sea denial by using organic sensors and weapon systems to

complete kill webs as well as by integrating organic capabilities with naval and joint all-domain capabilities.⁴

As an enabler to all of the warfighting functions, the information warfighting function is critical if we are to realize the above description of SIF. Figure 2 provides a visualization of how the information warfighting function supports Marines as they perform SIF missions and the requirements that must be fulfilled for this support to happen effectively. The information advantage pyramid illustrates the requirements needed for any force—in this case, SIF—to create an information advantage. Specifically for SIF, the diagram shows them performing the range of expeditionary advanced base operations while focusing on the enduring function of winning the reconnaissance/counter-reconnaissance battle.

A Concept for Stand-in Forces tells us the all-domain collection plan developed to win the recon/counter-recon battle provides the foundation for the force’s overall scheme of maneuver.⁵ The information function is critical both for the fight to generate an accurate all-domain picture of a potential adversary and also for the fight to deny adversaries from developing their own picture of us, not only of SIF but also of the fleet, joint force, and allies and partners. Generating our own accurate picture while denying the adversary such a picture describes a form of information advantage that *MCDP 8* refers to as *systems overmatch*. In this case, intelligence systems overmatch. Said another way, achieving an all-domain reconnaissance picture while denying such a picture to an adversary is a form of information advantage. For it to be useful, such intelligence must be in a suitable form and be delivered to the right place in a timely fashion. Denying such a picture to an adversary means disrupting this chain within the opposing system. Understanding how this warfighting function helps us win the recon/counter-recon battle is one of the ways information advantages help us achieve our objectives.⁶

The left side of Figure 2 illustrates how we build the pyramid that helps SIF accomplish their objectives. The

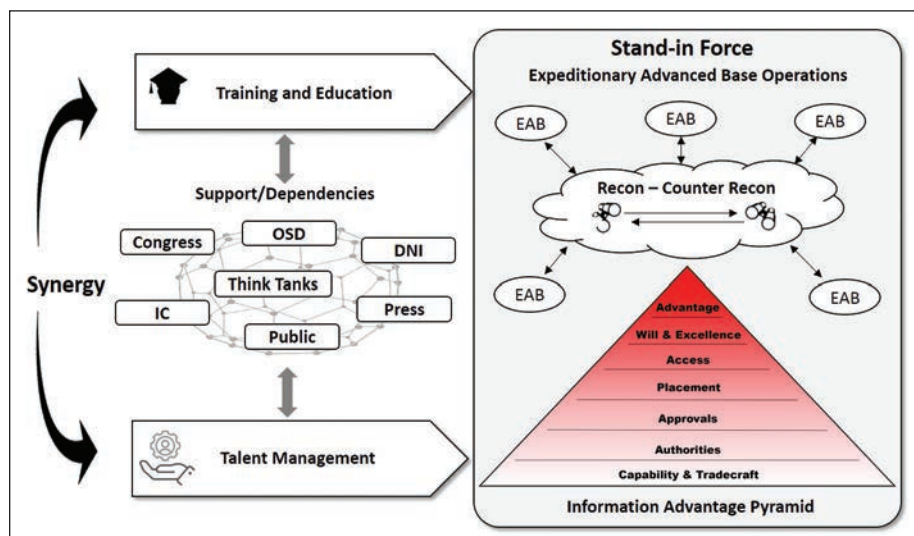


Figure 2. The Information Warfighting Function and Stand-in Forces. (Figure provided by author.)

Training and Education arrow depicts a line of effort required to build the pyramid and then apply it in SIF operations. For example, to create information advantages in support of SIF Marines must learn such things as where authorities are held and how to seek timely approval to use those authorities. They must also learn how these are related to a wider community that can affect their use, many of which are shown underneath the heading of Support/Dependencies. Then, specific Marines need training in their craft so they can create a capability for use, and staffs at multiple levels need training on how to create information-related concepts of employment and the processes to use to obtain approvals that are fully integrated with the other warfighting functions. Once individual skills are developed, units of Marines need to practice creating timely information advantages that are then integrated into a combined arms approach. They can do this in wargames and exercises at all levels, from command post exercises to major joint exercises.

Finally, Talent Management is the engine in the background that makes all of this work. The arrow in Figure 2 illustrates how the right people are needed to understand the physical and non-tangible aspects of the information environment and visualize combinations of capabilities that result in operating effectively in the information

environment. Many of the necessary skills are not just perishable, but they also evolve at a rapid pace as technology changes, which places a premium on managing the human resources—the people—who need to evolve at least as fast as the technology. Figure 2 also illustrates the human relationships needed to create synergy, such as the relationships between the Intelligence Community and units performing SIF missions. Talent management helps ensure these important relationships are identified and then taken into account as personnel change. Ultimately, both arrows are necessary if we are to achieve the excellence required to create effective information advantages.

Conclusion

I know from my own experience that what is described in this article is well within the Marine Corps' grasp. I have seen Marines at Marine Corps Forces Cyberspace Command create information advantages in ways remarkably similar to the pyramid in Figure 1. I can say the same for the Marine Cryptologic community. Both groups created information advantages that were regularly, and effectively, employed in operations by a variety of commanders who either had the authority to use their capabilities or were given the approvals to do so. Indeed, the sustained excellence demonstrated by these Marines led to them receiving approvals to operate

more frequently in the information environment. As all Marines know, demonstrating competence in a competitive environment is a confidence builder and can give your adversary pause to reconsider their own plans.

Marines performing SIF missions can generate this same kind of confidence and it can lead to obtaining the approvals they need to operate effectively in the information environment. This article gives an overview of how that can be done, and the publication of *MCDP 8, Information*, provides the conceptual underpinning for it. The Marine Corps is also looking at how we organize to do this most effectively, all the way from Headquarters Marine Corps, to the Marines performing SIF on the “leading edge of a maritime defense-in-depth.” I encourage all Marines to think about our newest warfighting function and how it relates to our current and emerging operating concepts. Contribute to the discussion. Our ability to create winning advantages depends on it.

Notes

1. Danny Yadron, Devlin Barrett, and Julian E. Barnes, “U.S. Struggles for Response to Sony Hack,” *Wall Street Journal*, (December 2014), available <https://www.wsj.com>.
2. Alex Drozhzhin, “Black Hat USA 2015: The Full Story of How That Jeep Was Hacked,” *Kaspersky Daily*, (August 2015), available at <https://www.kaspersky.com>.
3. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: 1997).
4. Headquarters Marine Corps, *A Concept for Stand-in Forces*, (Washington, DC: December 2021).
5. Ibid.
6. Headquarters Marine Corps, *MCDP 8, Information*, (Washington, DC: n.d.) (Unreleased).



Our Belleau Wood Moment

Meeting the challenges of the information environment

by Maj Audrey F. Callanan & Col Jordan D. Walzer

In 1899, the Commandant of the Marine Corps, MajGen Heywood, received a shocking report: only 89 Marines out of the entire Marine Corps could qualify with a rifle as marksmen or sharpshooters.¹ This sparked a concerted effort to professionalize the Marine rifleman. Nearly two decades later, Marines deployed to France and were thrust unexpectedly into the lines at Belleau Wood. However, the attacking Germans were surprised as they started to get picked off at distances once thought impossible—even from as far as four football fields away. The Marine Corps experienced a “Belleau Wood moment” that has carried on to this day.² This hard-earned reputation for marksmanship helped establish the Marine Corps as an expeditionary force for the next hundred years. Today, the Marine Corps stands again on the edge of a precipice, and the evolving operating environment demands new formations, new missions, and new skillsets. As in 1899, the Marine Corps is woefully unprepared for the challenges our Marines will face—especially in the information environment (IE). To adapt, we will need to fix some critical “holes in our swing.” We must professionalize the information-related capability areas into a cohesive Information Maneuver (IM) Occupational Field capable of integrating and fighting as a part of a combined arms team.

In a contested IE, we must train to the standard we are expected to fight.³ To gain and maintain information advantage, we must sense, make sense, and act faster than our rivals. In doing this, we create an advantage in three areas: systems overmatch, prevailing

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narrative, and force resiliency. Achieving this advantage requires maneuver in the IE by a convergence of capability and tradecraft, authorities, approvals, placement and access, will and excellence, and lethality.⁴ If you stacked these requirements in the shape of a pyramid, you would find the foundation built on the skills and experience of the individual Marine. As with any warfight-

From this, the Marine Corps can begin to harness the value of information advantage. U.S. joint and interagency partners are often the cornerstones of competence within these information capabilities. We are holding ourselves back from reaching the same level of expertise with the constant rotation of the IM workforce. Gaining, growing, and maintaining these exquisite skills

... the Marine Corps stands again on the edge of a precipice, and the evolving operating environment demands new formations, new missions, and new skillsets.

ing function, the underpinning rests on competence to demonstrate capability and excellence in one’s craft—in this case, those trained to fight in the IE. With information capabilities, like space and influence operations, significant training and education investments are required for Marines to be technically and tactically proficient. Professional growth and development opportunities come from successive assignments within the occupational field, which allows Marines to master their craft.

requires a professionalized force capable of unleashing the ingenuity of the individual Marine.

Several years ago, the Marine Corps professionalized and established occupational fields for Cyber Operations and Communications Strategy and Operations and a Primary MOS (PMOS) for Enlisted PSYOP Marines—but not the other IM capabilities areas. As a result, when a Marine checks aboard their unit to fill the billet of a Space Operations Staff Officer, for example, they may

not have been to a MOS-producing school yet and are likely working in the IM field for the first time. As these are Free MOSs and not PMOSs, they will also likely never work in this field ever again. III MEF Information Group's (MIG) current manpower roster shows 39 Marines filling IM roles at the headquarters. Of those, 32 were on their first IM tour, and only 7 were on their second tour (6 of those because they are in PMOSs of cyber or enlisted psychological operations). The Marine Corps cannot expect to prevail in competition or conflict with a transient force that brings "junior operational experience" only in the IM capability areas regardless of grade. *Force Design 2030* directs that we must commit to a cycle of continuous learning to ensure a margin of advantage over our adversaries.⁵ Yet, the current model forfeits the ability to build senior Marines with the required breadth of experience. Roles like the MIG's Information Command Center

director or the schoolhouse director for IM MOS-producing schools need to be filled by Marines who are purpose-built for those assignments. This would not happen at any other Marine Corps unit. Can you imagine a Marine Aircraft Group operations officer who is not a Weapons and Tactics Instructor or an operations officer at an infantry regiment who did not have significant kinetic fires experience? This current model is akin to the old Marine Corps' Career Broadening Tours—a program to address high-demand/low-density MOS shortfalls that produced only Secondary MOSs. A significant flaw in the program was it left many Marines out of step with their peers and less competitive for promotion. "Career broadening" did not work in 1983, and it does not work now.⁶

This model is at odds with current Talent Management guidance that states talent retention must be a priority.⁷ Talent retention is not just keeping Marines

in uniform—it is using the talents of the individual Marine and providing commanders and staff with appropriate subject matter expertise. Done right, IM Marines help commanders and staffs understand and leverage the pervasive nature of information and maintain the advantage in the IE across the seven warfighting functions.

Currently, the Information Warfare Coordinator at II MEF is a tank officer, and the Marine Corps Information Operations Center's S-5 is a military police officer. They are members of a community subject to involuntary MOS reclassifications and directed lateral moves (LATMOVE) in support of *Force Design 2030*. Once they LATMOVE, they will move onto a new PMOS and seek to establish credibility to remain promotable. This would pull them away from valid operational requirements and the ability to make meaningful contributions in the IM community where they have already developed subject-

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matter expertise. Today, there is no way to retain these talented Marines in the IM community.

With such a glaring problem, we must offer a solution. The Deputy Commandant for Information signed a decision memorandum that directed the staff to find manpower solutions to integrate IM into a combined arms team and professionalize a dedicated force to address current readiness issues. This includes consolidating all IM capability area MOS's into the 17XX Occupational Field and creating two new PMOSs: 1706 Maritime Space Officer and 1707 Influence Officer. Transitioning FMOS billets where Marines receive "just in time" training to PMOS billets where Marines arrived trained and experienced has an immediate impact on unit readiness and the push toward MIGs reaching full operational capability. The Marine Corps must solve the fundamental "people" challenge we have laid out and provide the forces operationally required by the combatant commanders and the MEFs. Building hybrid LATMOVE and direct accession PMOSs with formalized career progression and the ability to capitalize on experience in subsequent assignments are critical elements of the Commandant's *Talent Management 2030* strategy. This offers Marines an alternative to accepting their current PMOS for an entire career or separating from the Service.

Not everyone agrees that the Marine Corps needs an IM Occupational Field. We are known for "close with and destroy," and some ask why should we veer so far off our brand? The Marine Corps will always prepare for a kinetic fight. However, all you have to do is look at the current operating environment and see how our rivals are competing and making small yet incremental advancements in the strategic environment. They know precisely what Sun Tzu meant by "a victorious army wins its victories before seeking battle." The debate is not if the Marine Corps has a valid requirement for Marines who are versed in these topics but what level of mastery is required for the current and future force success. Because the IE is always relevant and information advantage can be gained or lost in any do-

main, information is the commander's business. This does not negate the need for a subject matter expert to advise the commander and staff on the information warfighting function, especially as our opponents' information capabilities pose an enduring challenge. Force health is the commander's business, but no one contests the need for a battalion medical officer.

As Stand-in Forces, do you think we will need more or less cyber operations capability?

Our pacing threat focuses on information-related capabilities.⁸ As Stand-in Forces, do you think we will need more or less cyber operations capability? Will we be more or less dependent on space operations in the future? What about electromagnetic spectrum operations, influence operations, or deception planning? This is not about deviating from who we are as Marines; this is about increasing our arsenal of weapons in a combined arms fight.

One could also argue that smaller MOSs come with inherent risk. While this is true, it does not negate our IM requirements. We assumed risk by standing up cyber in 2018. It posed challenges then and still does. Cyber will need care and feeding for years to come before it is healthy, but it is a critical capability that few would argue we do not need. Lack of professionalized skillsets developed over multiple tours leaves the Marine Corps less capable of performing mission requirements. Instead, we can preposition a risk mitigation strategy that renders the IM Occupational Field, as proposed, supportable at moderate risk. The question is not whether we can assume the risk associated with the professionalization of the IM Occupational Field—the question is, what is at stake if we do not?

Change is hard because it always involves risk, but the Marine Corps has never been a risk-averse organi-

zation. We are purpose-built to leave the safe harbor, and it is not enough to adapt—we need to adapt quickly. Rivals in 21st-century competition and conflict value information as central to their way of war and have designed their force for this operating environment. According to the *38th Commandant's Planning Guidance*, "Everything starts and ends with the individual Marine." As we professionalized our riflemen over a hundred years ago, we have a fleeting opportunity to meet the challenges of the future fight. We must create an IM Occupational Field capable of integrating and fighting as a part of our profession of arms; this is how we maintain an asymmetrical advantage over the adversary. This is our Belleau Wood moment.

Notes

1. Staff, "The Beginnings of Marine Corps Marksmanship," National Rifle Association, (January 2021), available at <https://www.americanrifleman.org>.
2. "Our Belleau Wood moment" is a phrase used by BGen William Bowers to refer to generation-defining moments to meet the needs of the future operating environment. He cites (Owen, 2014).
3. Gen David H. Berger, *38th Commandant's Planning Guidance*, (Washington, DC: July 2019).
4. This model was developed by LtGen Matthew Glavy, and it describes the convergence of factors need to gain and maintain information advantage.
5. *38th Commandant's Planning Guidance*.
6. Scott Vasquez and Michael Williams, "Re-engineering the Marine Corps Officer Promotion Process for Unrestricted Officers," (thesis, Naval Postgraduate School, 2001).
7. *38th Commandant's Planning Guidance*.
8. Ibid.



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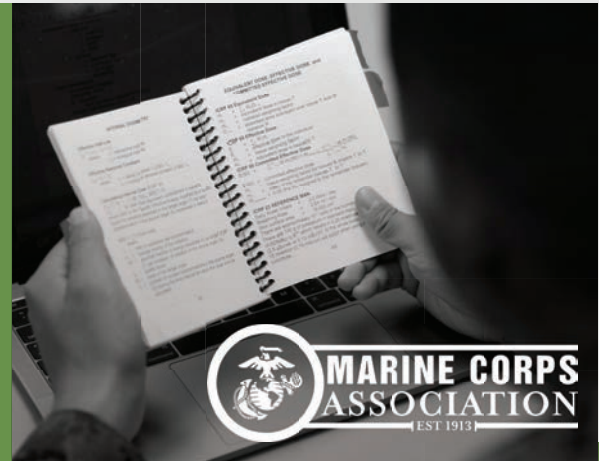
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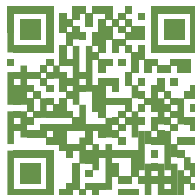
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Methodical Modernization

How the Marine Corps is modernizing its network to compete, fight, and win

by LtCol Donald Barnes

Drivers of Change
The Marine Corps has no shortage of guidance directing the investment in modern technology, the development of warfighting concepts, and rules and regulations governing the functioning of its network. In 2019, the 38th Commandant of the Marine Corps, Gen David Berger, published his planning guidance to the force. In this document, he laid out his vision of how the Marine Corps must be designed to compete, fight, and win against the Nation's adversaries: "We must be capable of plugging into naval, joint and combined communications networks and seamlessly sharing data that enhances situational awareness, targeting, and force synchronization."¹

The Deputy Commandant for Information directed the development of a comprehensive Network Modernization Plan. This plan required the synchronization of all the work to date on network governance, Marine Corps Enterprise Network (MCEN) command and control (C2), information technology (IT) acquisition reform, IT portfolio management, processes for IT service management, and network architecture. In addition, the purpose was to identify the requirements, costs, and risks associated with network modernization over the *Future Years Defense Plan* (FYDP).

Why?

So why do we even need a network modernization plan? The answer is simple: the authoritative reference documents directing actions to or on the network are not synchronized with one

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another across time or with the larger force development process. This effort was designed to reconcile, prioritize, and coordinate all tasks and actions related to the network to ensure alignment across the force supports warfighting.

Many programs and system application owners build and maintain the MCEN. However, these projects began during an era of unchallenged technological supremacy, with relative freedom of maneuver and fewer fiscal constraints. The Marine Corps faces

staff also released its concept for Joint All-Domain C2, and the Department of the Navy CIO has published its planning guidance for the development of the Naval enterprise—inclusive of both the Navy and Marine Corps networking environments. All these documents and others provide an overwhelming number of tasks and directions that the Marine Corps must consider when developing its capabilities over time (Figure 1 on following page).

Definition

In order to modernize the network, you must first define it. According to the *Marine Corps Enterprise Network Modernization Plan*:

The network is the technology that connects Marine end-users, in any location, with external mission partners, commercial services, applications and data hosted in a hybrid cloud environment. The MCEN Modernization Plan applies to all network capabilities regardless of classification, physical location or warfare domain application.²

Previous Challenges

Operationally, deployed units had to take everything with them and completely build their networking environment from the ground up. This required both enormous amounts of time and the forward deployed unit to federate their network with the larger MCEN.

So why do we even need a network modernization plan?

incredible challenges surrounding renewed competition, a more constrained fiscal reality, and a complex global security environment. To combat these challenges, the Marine Corps needs an efficient and effective network to enable the use of data that we produce and collect to continue fighting and winning against the Nation's adversaries.

Additionally, the DOD Chief Information Officer (CIO), armed with new authorities over service budget certification, has published the *DOD CIO Capabilities Planning Guidance*. The joint

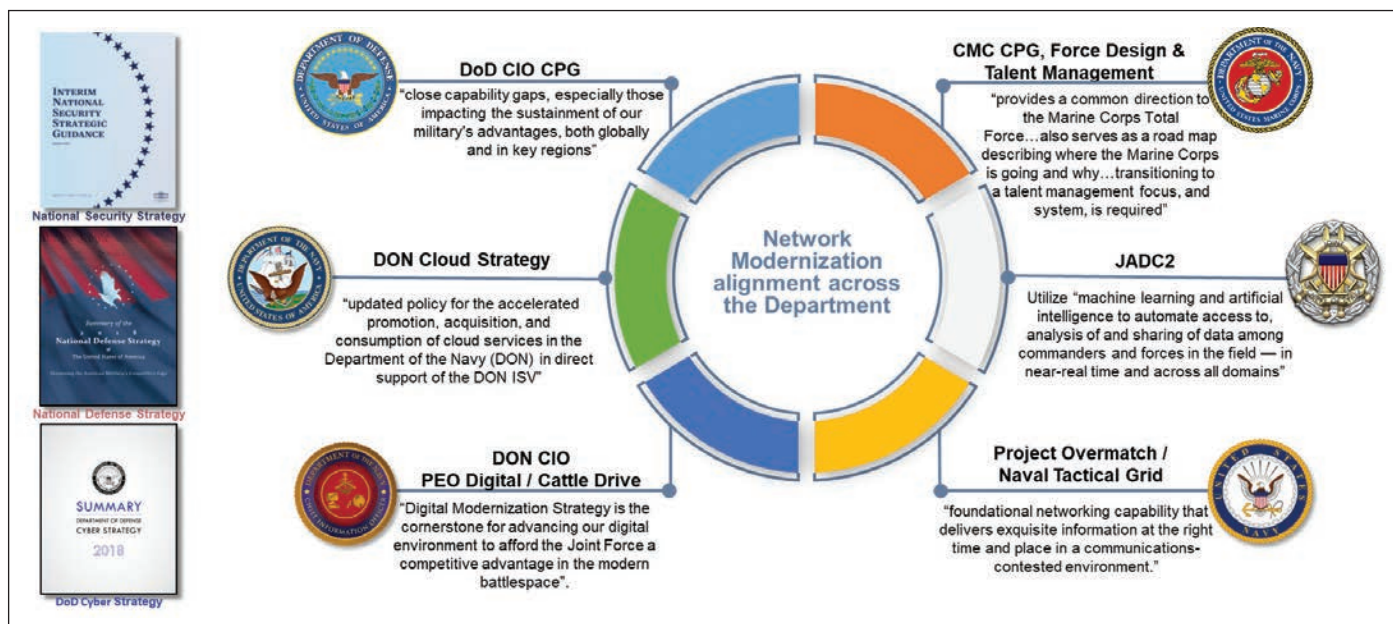


Figure 1. Drivers of change. (Figure provided by author.)

In addition, they were limited by the amount of data they could store locally and the processing power resident in their organic equipment.

Network modernization entails not only a refresh to newer equipment but more specifically entails a massive increase in capability for the entire force.

Future Network

While this definition defines the network, it is equally important to identify the attributes of the future network we want to create.

Force Design Focused

The network must reinforce the Commandant's force design priorities through modernization, innovation, and experimentation to achieve operational effects in full partnership with the Navy.

Unified

We aim to achieve a single, unified network that allows the Service to move data from the enterprise to the tactical edge and back again using a common set of standards for our applications and data.

Data-driven

It is all about the data. The network provides seamless access to data, wher-

ever it exists, to allow commanders to make the best, most informed decisions possible. The data-driven network of the future improves the quality and speed of decision-making.

Cloud-enabled

Marines leverage elastic infrastructure, platforms, and software, as they are available and as they become needed. The cloud-enabled network of the future reduces the Service's data center footprint, increases computational power on demand, reduces cost, standardizes designs, and enhances flexibility.

Service-based

Applications leverage cloud-native designs, built through an accredited and managed pipeline and consumed through an enterprise service catalog. Critical services and applications must continue to function, and critical data must remain available to forces operating in denied, degraded, intermittent, and limited bandwidth environments.

Optimized for Warfighting

The network is a weapon system that enables dominance in the information environment. The commander's understanding of the status of the network informs combat readiness, and the capabilities of the network are combat

capabilities—not just in cyberspace but across all warfighting domains.

Structure

To deliver the future network and to do so in a methodical and focused fashion, we must organize the plan to account for all facets of the network. We must also modernize in a resource-informed way to ensure we can afford the network we need and want across time. The plan was structured along two approaches. One approach encompasses the management disciplines that describe *how* the Service will manage change and set the conditions for the technical changes to come. The second approach encompasses the technical investments necessary to modernize the network and largely describes *what* will be changed. These two approaches, depicted in Figure 2, work together to deliver the future network.

The two approaches are then laid across time in three distinct phases: Foundation, Adaptation, and Transformation. The Foundation Phase sets the conditions for modernization by ensuring the infrastructure and core capabilities are in place. The Adaptation Phase changes how the network delivers capability by focusing on the data and applications across the service and how those applications interact. Finally,

the Transformation Phase brings about the capabilities needed to make sense of all the data the Service creates. It involves the maturation of capabilities, such as artificial intelligence and machine learning, allowing commanders the ability to sense and make sense of the actions occurring on the network enabling more informed decisions.

In addition to a logical approach towards modernization, a focus on the investments that produce value to the Service is needed to deliver effects on the battlefield. The connection of those value streams to the tasks derived from authoritative guidance, informed by the requirements from all network stakeholders, provides the necessary prioritization of effort required to methodically modernize the network over time. It is also essential to understand that this plan is released annually to account for the inevitable changes in fiscal posture, shifting requirements, emerging technologies, and evolving warfighting concepts. The network is a living entity that is changing every second of every day.

What Have We Achieved?

The Marine Corps first released the Network Modernization plan in June of 2020 and released the second iteration in June of 2021. Since its initial release, the Marine Corps has been able to use this document to drive needed investments and guide the modernization effort across the Service.

The Marine Corps has continued to optimize its data transport capability by providing multi-path transport links into and out of our bases, posts, and stations. We have migrated 90 percent of the entire network behind the Joint Regional Security Stacks, providing a singular security environment for the Service and enhancing our defensive capabilities. We have achieved a tenfold increase in the bandwidth at our bases, posts, and stations, laying the foundation for our use of cloud computing capabilities. We have enabled the service to continue to operate during the COVID-19 pandemic and increased telework capabilities by increasing the virtual private network capacity by four times.

We have modernized the most critical 40 percent of the core networking de-

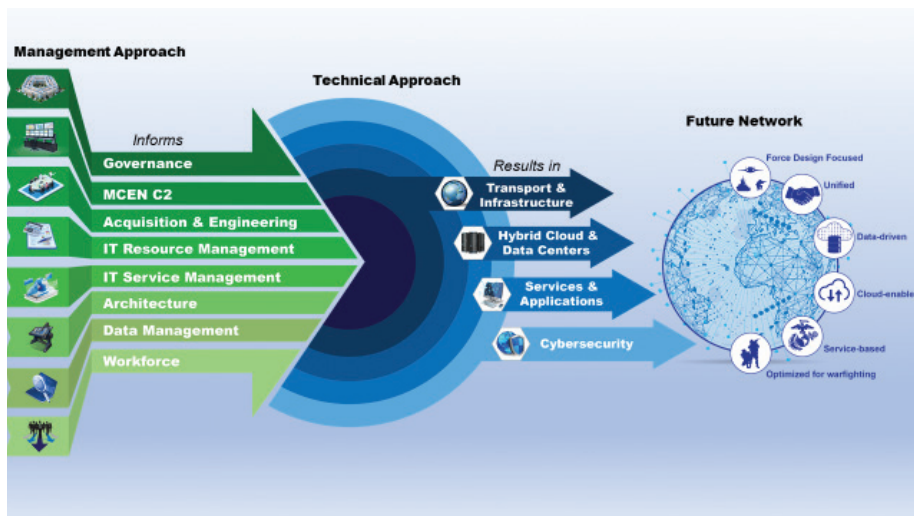


Figure 2. Logical dependencies in the plan. (Figure provided by author.)

vices across the force and refreshed core routing capability, allowing for cloud computing. In support of the warfighter at the tactical edge, the Marine Corps has invested in new technologies for our tactical radios and long-haul communications assets, increasing bandwidth and range. We are currently investing in emerging technology that will reduce the likelihood of communications being intercepted or even detected, increasing the lethality and survivability of our Marines. Finally, we installed the first of several Tactical Entry Points, enabling deployed forces to connect directly into the MCEN.

One of the most visible modernization efforts has been deploying the Office 365 environment on the Non-secure Internet Routed Protocol Network. The Marine Corps is the first Service within the DOD to fully implement this new set of collaborative capabilities. As a result, users across the force have experienced a massive increase in capability including mailbox size and storage capacity. This has introduced new applications and toolsets, such as the Teams application. This has reduced our reliance on our data centers by 75 percent. Additional capabilities such as SharePoint Online allow our Marines to perform a level of software development and application development based on data across the Marine Corps to automate routine functions and provide information to their Commanders faster than ever before.

The migration to a more cloud-centric environment presents new opportunities to modernize the everyday applications that Marines use on a daily basis. Currently, organizations such as Manpower and Reserve Affairs are leading the cloud migration effort and have already moved 81 applications to the cloud. This provides us the opportunity for changes and improvements in near realtime.

Current Priorities

Continuing on the journey towards the future network described earlier, Information Command, Control, Communications, and Computers is focused on delivering several priority efforts. The first is the development and delivery of the Deployed Marine Corps Enterprise Network. This concept is envisioned to erase the seam between the tactical and enterprise environments by bringing the deployed force into the MCEN allowing for a more cohesive security environment. This also allows data collected across the force to be available at the point of need and ultimately connects the deployed force to the same cloud environments used by the entire force.

Increasing our collaborative capabilities within our classified environments is of particular importance as well. We are currently working on developing and deploying Office 365 on the Secure Internet Protocol Routed Network with similar capabilities in use today on the

Non-secure Internet Routed Protocol Network.

Cybersecurity underpins all priorities and actions on the network. Modernizing the current Risk Management Framework that we use to accredit our systems and applications is essential to reduce the time required for full accreditation. Additionally, we are working to achieve the ability to maintain a continuous accreditation to eliminate cumbersome and manual processes of review and approval.

The Marine Corps continues to transform how we build and host applications and data. Network modernization requires a deliberate approach to restructuring systems—away from the need for hardware-based systems located in Marine Corps-owned data centers and instead towards a software-based environment located in the cloud. We are focused on optimizing investments in data centers, maximizing the efficiency of building and hosting ap-

plications for the future network, and investing in the tools and standards that embody a modern approach to building enterprise systems and applications. This will ensure that future systems are born and bred to be secure, scalable, interoperable, agile, and cloud ready.

Next Steps

We will continue to update the Network Modernization plan to keep pace with the continued development of the force design concept and emerging guidance such as the recently released guidance regarding talent management. The Deputy Commandant for Information is also working on focusing the efforts toward network modernization by establishing a Task Force for Network Modernization, comprised of stakeholder organizations responsible for planning and executing modernization efforts. This task force will focus the entire enterprise on delivering the prioritized capabilities and technologies

to achieve velocity in delivering capability to the force. The world is constantly changing, and we need our networks to keep pace so that Marine Corps can continue to fight and win.

Notes

1. Gen David H. Berger, *38th Commandant's Planning Guidance*, (Washington, DC: July 2019).
2. Deputy Commandant for Information, *The Marine Corps Enterprise Network Modernization Plan*, (Washington, DC: 2021).



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MCDP 8, Information

A new Marine Corps doctrine for the information warfighting function

by Mr. Eric X. Schaner

The Marine Corps is on the cusp of publishing a new doctrine. When Gen Berger, 38th Commandant of the Marine Corps, signs *MCDP 8, Information*, it will become the Marine Corps' first doctrine to describe information as a warfighting function. Publishing *MCDP 8* will mark a significant milestone of a multi-year Marine Corps effort to understand what it means to have an information warfighting function. It will also mark a starting point for Marines to understand the role of information on every point of the competition continuum and to more effectively plan and conduct operations in any warfighting domain to create and exploit information-based advantages.

The goal of *MCDP 8* is to describe the purpose and mechanics of the information warfighting function and to make it understandable and accessible to all Marines for use in any situation. Applying its lessons will effectively resolve the information afterthought problem that has plagued staffs throughout the years. By making information a warfighting function, we make information the commander's business. From any warfighting domain, commanders can apply the information warfighting function to create and exploit a multitude of advantages and achieve objectives. The purpose of this article is to briefly highlight the path leading to *MCDP 8* and then summarize the main ideas and concepts contained within the draft doctrine.

The Path to *MCDP 8, Information*

The path to publishing *MCDP 8* began on 15 September 2017. This is the date when Secretary of Defense James Mattis signed a memo endorsing the establishment of the information joint function. Just two months prior to the

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Secretary's memo, the Chairman of the Joint Chiefs of Staff issued an out-of-cycle change to *Joint Publication 1, Doctrine of the Armed Forces of the United States*, introducing information as a new, seventh joint function.¹ Around this same time, the Marine Corps was already deep into thinking about and debating the subject of information and related concepts, terms, and organizational change requirements.

By August 2018, several new information-related concepts had been published and new organizations were stood up to include the MEF Information Group and the Deputy Commandant for Information (DC I). To continue advancing the Marine Corps' thinking and to align with the joint force, Gen Neller, 37th Commandant of the Marine Corps, signed a *Marine Corps Bulletin 5400* in January 2019 to formally establish information as the Marine Corps' seventh warfighting function. Then, in May 2020, Gen Berger formally tasked the DC I to assemble a small writing team to develop *MCDP 8*. The new doctrine is nearing its final draft.

Information Explained

In conducting the research for the draft doctrine, the DC I team observed that the subject of information is very broad and applicable to many disciplines and fields. There is no one single correct definition or description of the word information. To set the context for a focused purpose and scope, *MCDP 8*

acknowledges and explains the various ways in which the word information is commonly used. This includes information as it relates to intelligence, command and control (C2), situational understanding, fires and maneuver, decision making, and all forms of human and machine behavior.

Furthermore, the draft doctrine discusses that information is fundamental to the functioning of all societies, governments, and organizations. It also discusses information as an instrument of power, employed in concert with the diplomatic, military, and economic instruments to influence strategic outcomes, impose our will, or achieve other policy goals. The main point is the word information can convey different meanings depending on its use. *MCDP 8* devotes a considerable amount of text to explaining these different uses and to draw the reader into the publication's focus on information as a warfighting function.

Why Information?

Feedback received during an early staffing of the *MCDP 8* included a recommendation to start with the question of why. Why do we need an information function? This caused the DC I team to examine how America's rivals approach information as a primary element of competition and war. In our research, we concluded that information is central to our rivals' way of thinking and fighting—and it must therefore be a focus of ours. The U.S. and joint force are challenged in the strategic environment by rivals who effectively use information to gain a relative advantage. Marines should never assume they have an information advantage. The Marine Corps, as part of the joint force, supports U.S. policy goals by creating and exploiting information advantages in

all warfighting domains and the electromagnetic spectrum. This involves taking defensive and offensive actions to protect vital information, influence or compel decision makers, or use information to increase or preserve combat power effectiveness when necessary.

MCDP 8 explains that through the information warfighting function, Marines gain the ability to leverage the power of information to influence the decision making, behavior, function, and will of others, or steer the course of events in any military situation—including combat situations—by creating and exploiting information advantages. *MCDP 1, Warfighting*, states: “*The essence of maneuver is taking action to generate and exploit some kind of advantage over the enemy as a means of accomplishing our objectives as effectively as possible.*”² *MCDP 8* draws from *MCDP 1* to explain the concept of creating and exploiting information advantages as a primary means of accomplishing our objectives and imposing our will.

How Do Rivals Approach Information?

Based on the feedback noted above, the DC I team was compelled to provide an expanded discussion in the draft doctrine of how our rivals exploit information and technology through advanced warfighting concepts. Beginning in the mid-20th century, a series of information and technology advances made information a global phenomenon. Rivals and adversaries have since become skilled at navigating and exploiting this phenomenon to challenge some advantages the United States held throughout, and immediately after, the Cold War.

To help Marines understand how rivals use information to their advantage, *MCDP 8* highlights the differences between rival and U.S. views of peace and war. A common goal of our rivals in competing with the United States and our allies is to win without fighting. This goal reveals a theory of victory in the strategic competition where our rivals avoid open conflict, preferring to achieve their goals through coercive gradual increments or opportunistic lunges.³

This goal illustrates how some rivals—such as the People’s Republic of

China (PRC), Russia, and Iran—see themselves in a constant state of struggle or war. Our rivals often use the word “war” to describe the enduring relationship between political actors in the international system. This relationship may rarely, or never, involve violence. This permanent struggle mindset is also common among non-state actors who hold similar views on the enduring nature and blurred divide between peace and war. This stands in contrast with views held in the United States where we have a tendency to think of these as being clearly divided: our Nation is either at peace or at war.⁴

MCDP 8 explains how rivals exploit our bifurcated viewpoint by laying out how they employ information as a central part of their competitive strategies. For example, one primary strategy the PRC uses short of open conflict is called the “Three Warfares.” *MCDP 8* explains the Three Warfares as the PRC’s comprehensive information-centric approach that involves three pillars: public opinion and media warfare, psychological warfare, and legal warfare. The overall objective of the PRC’s use of the Three Warfares is to control the narrative and influence perceptions in ways that advance China’s objectives while frustrating the ability of its rivals to respond.⁵

The PRC is not the only political actor to employ the aggressive use of narratives, psychological warfare, disinformation, or propaganda. *MCDP 8* discusses Russia’s approach to rivalry as similar to the PRC’s approach but with Russian thinking in “hybrid” methods of warfare. To create exploitable ambiguity and blur the peace-war divide, Russia’s political strategy toward conflict asserts that nations should no longer declare wars.⁶ This concept for blurring the peace-war divide mobilizes elements who engage in the undeclared hybrid form of warfare. In Russian hybrid warfare, civilian actors actively coordinate with irregular elements to accomplish the government’s goals. This civil-military fusion includes Russian business owners, media organizations, and political leaders working in lockstep with the Russian military and security forces under an orchestrated political narrative and set of objectives.

Underpinning Russia’s hybrid method of warfare is the concept of reflexive control. *MCDP 8* explains that Marines should understand reflexive control as an information-centric theory rooted in manipulating perceptions and the actions taken to create confusion and paralysis or to influence opponent behaviors and steer events toward Russia’s favor.⁷ Reflexive control is a concept that scales from geopolitical rivals at the strategic level to enemies on the battlefield at the tactical level.

What Is Our Theory of Information?

MCDP 8 intentionally focuses on rivals to set the stage for explaining our theory of information—a theory that describes the overarching logic and mechanics of the information warfighting function. First and foremost, our information theory is rooted in leveraging the power of information that is available through the modern information environment (IE). It is hard to overstate the impact of the modern IE and its effects on the character of society, international relations, military organizations, and the overall global security environment. The modern IE puts the power of information into the hands of any individual or group with access to advanced communications and digital media technologies. Instant global communications, advanced technologies, and hyper-connectivity empower individuals, nations, and non-state political actors who seek to challenge the United States and exert their influence on a global scale.

War, like all other forms of competition, is fundamentally about the distribution and redistribution of power through a contest of wills.⁸ *MCDP 8* provides the framework for unlocking the power of information through the information warfighting function. Our theory and the mechanics of the information warfighting function are illustrated in the simple doctrine logic model shown in Figure 1.

All Marine Corps units generate, preserve, deny, and project information to create and exploit information advantages as a means of accomplishing their objectives and imposing their will. The draft doctrine establishes three

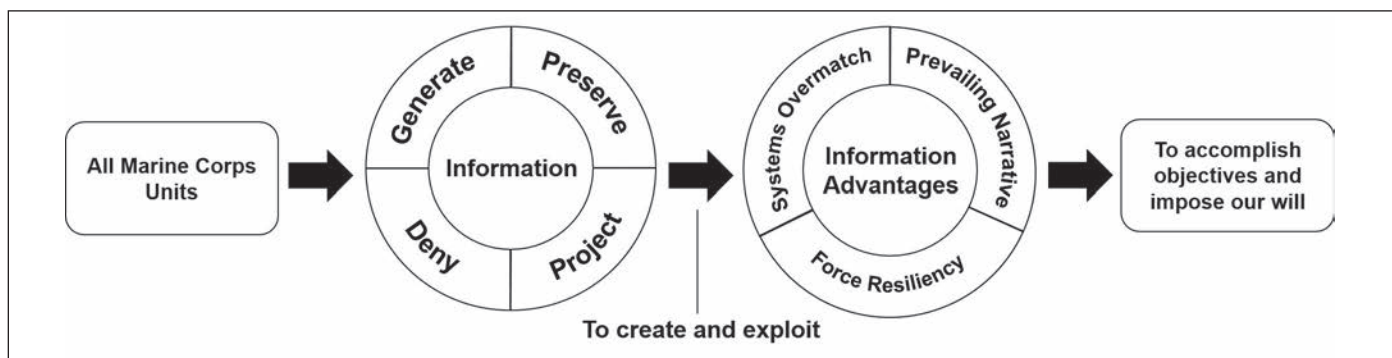


Figure 1. Information advantage doctrine logic. (Figure created by author.)

types of information advantages that Marines seek by applying the warfighting function: *systems overmatch*, *prevailing narrative*, and *force resiliency*. The intent of our information theory, as expressed by this doctrine, is to make the information warfighting function accessible to all Marines and useful to any commander who seeks to create and exploit information advantages in pursuit of mission objectives.

Systems Overmatch

MCDP 8 discusses systems overmatch to refer to the technical advantage of one side over another, yielding fires, intelligence, maneuver, logistics, force protection, or C2 advantages. All warfighting functions, and the systems used to perform these functions across the range of military operations, depend on assured access to trusted information. The same holds true for our adversaries and their respective functions and systems. By denying, degrading, manipulating, or destroying the information flowing to or within an opponent’s systems, such as weapons systems and C2 systems, Marines can sow doubt or confusion in the opponent’s mind, or disrupt their ability to function in a cohesive way. *MCDP 8* introduces the idea of information systems confrontation and destruction—which is effectively the ongoing offensive and defensive actions in the battle for systems overmatch. When these actions are combined with misinformation, disinformation, deception, propaganda, and supporting actions, commanders can generate significant military advantages, including combat power advantages.

Prevailing Narrative

In drafting *MCDP 8*, the DC I writing team spent considerable time researching and thinking about the concept of narrative and its role as a form of information advantage. Narratives play an important part in every operation and activity because they give meaning to a set of facts.⁹ Credible narratives are the most effective and a prevailing narrative is a credible narrative that resonates most with an intended audience. *MCDP 8* emphasizes the need to achieve a prevailing narrative that results in a public opinion or perception advantage by yielding trust, credibility, and believability in our presence, mission, and objectives.

Between any two opponents, the prevailing narrative can be compelling and can lead to the success or failure of one side over another, regardless of its truthfulness. For example, several negative prevailing narratives about U.S. involvement in Vietnam eroded U.S. popular support. The loss of popular support undermined U.S. tactical and operational successes and ultimately led to U.S. withdrawal from the conflict. To emphasize the importance of narrative, *MCDP 8* establishes the need for a command narrative. The draft doctrine describes the principles and actions commanders can take to create effective command narratives and to protect them from disruption. It also discusses some of the challenges and techniques for assessing narratives and replacing harmful narratives with credible ones that help the command achieve its objectives.

Force Resiliency

Resiliency is a defining characteristic of every Marine and is critical to stand-in forces persisting forward in contested zones. *MCDP 8* explains force resiliency as a form of information advantage. From this perspective, resiliency embodies every Marine’s ability to resist, counter, and prevail against adversary reconnaissance, technical disruptions, and malign activity such as misinformation, disinformation, and propaganda. In short, Marines resist, counter, and prevail against any threat that targets our systems, people, and our psyche. *MCDP 8* urges commanders to instill the familiar “assault through the ambush” mentality against information disruptions and attacks. It goes further to explain that commanders must reinforce this mentality by developing unit and individual action drills and by making training in response to aggressive adversaries a regular part of individual and unit development.

The Four Functions of Information

Just like there are functions of logistics and intelligence, *MCDP 8* describes four functions of information that are applied in operations to create and exploit information advantages. The functions of information in Figure 1 are: *generate*, *preserve*, *deny* and *project*.

Information generation refers to all actions taken to gain and maintain access to the IE; build awareness of information-based threats, vulnerabilities, and opportunities; hold opponent systems at risk; and create the necessary information to plan and conduct operations. Whether operating from home station or deployed overseas, Marines

are always in contact in the IE. Information generation is the function of information that couples a persistent presence in the IE with a robust effort to understand all relevant aspects of it.

MCDP 8 describes information preservation as all actions to protect and defend the information, systems, and networks used to facilitate friendly operations against internal and external threats. The fight to preserve information is continuous and involves activities such as network operations, cybersecurity, defensive cyberspace operations, electromagnetic spectrum operations, and physical security measures.

MCDP 8 explains information denial as any action taken to disrupt or destroy the information needed by the opponent to understand the situation, make decisions, or act in a coordinated fashion. This includes disrupting the ability of an opponent to gather information. Marines achieve this by exploiting an opponent's vulnerabilities as a primary means of denying them vital information. The draft doctrine explains information denial actions to include offensive cyberspace operations, electromagnetic attacks, directed energy attacks, and physical attacks. *MCDP 8* also explains a passive way of denying the opponent vital information is to selectively alter or suppress the visual, electromagnetic, and digital signatures emanating from friendly forces. This includes implementing operations security measures, communication discipline, camouflage, counterintelligence, and signature management. Information denial and preservation go hand-in-hand.

Information projection is the function of information that Marines apply to communicate, transmit, or deliver information of any type to inform, influence, or deceive an observer or targeted system. *MCDP 8* explains this to include a range of activities from using official communication to inform allies and the American public to using various creative methods to deceive an enemy. The Marine Corps projects information in many ways, including direct communication such as radio and television broadcast, print media, cellular communication, face-to-face communication, and various digital media. Marines also

project information by taking physical actions knowing they are observable to create specific information effects. An example of this technique is conducting freedom of navigation operations in strategic locations. Marines always consider and coordinate the methods and objectives of information projection with information denial.

New Concepts and Ideas as Well as Familiar Themes

In addition to what has been discussed above, *MCDP 8* presents additional content to include some new high-level concepts and ideas, as well as some familiar themes. One of the new ideas introduced in the draft doctrine is the concept that any military objective can be viewed as having both a cognitive and functional component,

By distinguishing between thinking and unthinking processes, *MCDP 8* establishes that information is the substantive input to both. This approach sets up a framework for understanding how we can use, manipulate, or deny information to directly or indirectly target human perception, cognition, decision making, behavior, and will; target the basic functioning of information-dependent systems; or both. The result is effectively two avenues of approach in the IE to aid in planning capabilities and specific actions to directly or indirectly target the cognitive component (i.e., thinking process) or functional component (i.e., unthinking process) of any system or objective. Figure 2 provides examples of how Marines can directly or indirectly target both components of a hypothetical objective.

Objective: Render the enemy radar system unable to support air defense		
	Cognitive Component	Functional Component
Direct Approach	<p>Aim point and desired effect: Human operator deceived through the human-machine interface (radar display).</p> <p>-----</p> <p>Action: Employ decoys to generate false radar returns.</p>	<p>Aim point and desired effect: Radar transmitter and receiver (transceiver) rendered inoperable.</p> <p>-----</p> <p>Action: Electromagnetic attack against transceiver overpowers (burns) system circuitry.</p>
Indirect Approach	<p>Aim point and desired effect: Human mind manipulated resulting in doubt in mission or cause.</p> <p>-----</p> <p>Action: Tailored propaganda through direct messages (email and cell phone texts).</p>	<p>Aim point and desired effect: C2 node disabled and unable to provide radar information</p> <p>-----</p> <p>Action: Denial of service attack through cyberspace.</p>

Figure 2. Targeting the cognitive and functional components of a radar system. (Figure created by author.)

and that each component is directly or indirectly targetable. This idea stems from research that revealed the behavior of any system, whether a biological system or a manufactured system, can be understood by the way the system processes information. By taking a systems viewpoint, *MCDP 8* draws the reader to conclude that no matter how simple or complex an information process is, it can be distilled into one of two types: a *thinking process* or an *unthinking process*.

In addition to discussing some new concepts and ideas such as thinking and unthinking processes, *MCDP 8* provides extensive coverage of familiar themes and topics that anyone should expect to be in a publication about the information warfighting function. These include robust discussions on the concept of human will, human and machine deception, and the information aspects of the attributes of war (e.g., ambiguity, uncertainty, and friction).

The draft publication also discusses at length the physical, moral, and mental characteristics of competition and war, as well as the threats, vulnerabilities, and opportunities the modern IE provides relative to these characteristics.

In addition to the above, one primary recurring theme emphasized throughout the publication is that in a hyper-connected digital world, everything that Marines say and do is potentially visible across the globe in near realtime. Marines must therefore be extremely disciplined in the IE by carefully considering their actions and words, whether in garrison, on leave, or deployed. *MCDP 8* also highlights the extent to which instant, global visibility compresses the levels of warfare by making it relatively easy for hostile actors to reach across geopolitical boundaries and target our critical infrastructures, citizenry, political leaders, and Marines for influence and disruption.

Institutionalizing Information

MCDP 8 is a four-chapter book. The content discussed thus far is contained within the first three chapters. Chapter four focuses on what the Marine Corps must do to institutionalize the information warfighting function. It begins by reaffirming the purpose of the warfighting function and its focus on creating and exploiting information advantages. The purpose is highlighted in order to clearly distinguish it from all other warfighting functions.

The draft publication then provides a detailed discussion of the mutually supporting relationships between the information warfighting function and all other warfighting functions. The final chapter then lays out eight specific focus areas that must be implemented to ensure the Marine Corps can leverage the information warfighting function to its full potential. These include integrating information into the planning process; prioritizing information in strategies, campaigns, plans, and orders; leveraging allies and partners; using training exercises for real-world effect; practicing discipline in the IE; establishing command narratives; updating doctrine, training, and education programs; and implementing agile

acquisition strategies to keep pace with technology developments.

Conclusion

Information plays a vital role in every activity conducted by Marines. It is fundamental to intelligence, C2, situational understanding, decision making, and all forms of behavior. It is central to the functioning of all societies, governments, and organizations. Information is also an instrument of national power, employed in concert with the diplomatic, military, and economic instruments to influence strategic outcomes, impose our will, or achieve other policy goals. Marines should understand all these perspectives of information and should never assume they will benefit from an information advantage without competing and fighting for it. We must therefore approach information with a maneuver warfare mindset.

Information plays a vital role in every activity conducted by Marines.

From privates to general officers, we all leverage information to succeed in competition and armed conflict. Whether taking a mindful action to reinforce the Marine Corps’ reputational narrative, selectively revealing capabilities to send a message, or applying technical acumen to defend or attack critical information networks—Marines need to know how to leverage information to accomplish the mission and ultimately impose our will at the decisive time and place.

Marines, therefore, apply the information warfighting function to outcompete, fight, and counter aggressive rivals by targeting the cognitive and functional components of opposing systems. The purpose of *MCDP 8* is to describe our foundational theory for leveraging the power of information through the information warfighting function and to guide Marines in thinking about information as a primary means to mission accomplishment. The new doctrine

provides a starting point for thinking about what an information-enabled future force looks like in the context of lethality and effectiveness at competing against peer adversaries on every point of the competition continuum. However, the true value of education is its application. This must be embraced and implemented by all Marines.

Notes

1. James Mattis, *Secretary of Defense Memorandum, Information as a Joint Function*, (Washington, DC: September 2017).
2. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: 1997).
3. Headquarters Marine Corps, *MCDP 1-4, Competing*, (Washington, DC: 2020).
4. Ibid.
5. Elsa B. Kania, “The PLA’s Latest Strategic Thinking on the Three Warfares,” *China Brief*, (Washington, DC: Jamestown Foundation, August 2016).
6. LtCol Timothy Thomas, “The Evolving Nature of Russia’s Way of War,” *Military Review*, (July–August 2017), available at <https://www.armyupress.army.mil>.
7. Can Kasapoglu, “Russia’s Renewed Military Thinking: Non-Linear Warfare and Reflexive Control,” (Rome: NATO Defense College, November 2015).
8. Geoffrey Blainey, *The Causes of War*, (New York, NY: The Free Press, 1973).
9. *MCDP 1-4, Competing*.



Public Affairs and OIE

“Help me, help you,” the daily plea of public affairs professionals

by Cols Kelly Frushour & Elizabeth B. Mathias

Imagine a football game. The team on offense has just broken their huddle, and the game is about to resume. The ball is snapped, players crash into one another, the quarterback looks downfield, and someone who had been sitting on the bench runs into the game. Not only is this interruption distracting, but the team also receives a penalty.

This scenario does not happen often because football players know their roles and know the game’s rules. They know when a play includes them, and they know the field markings that signal where to execute the play.

Though the information environment looks nothing like a football game, the analogy illustrates how communication activities can appear disorganized and ineffective. Many members of the joint force do not know information roles and rules, whether they are watching or participating. Public affairs practitioners may have the opposite problem, with experience making practices intuitive rather than explained. Now we share a responsibility to articulate and understand the guidance, practices, and goals of communication activities to make sure those activities best support our commanders and the nation.

Operational Responsibilities and Strategic Risk

When the Marine Corps sent a Marine Security Guard Augmentation Unit to support an embassy in a country that was going through a period of civil unrest, there was a Headquarters Marine Corps desire to be able to announce the deployment of the unit. However, Marine Security Guards are Title 22 forces and thus under the operational control of the U.S. Department of State. The State Department is the release authority for any announcements regarding

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Not everyone is in the game at the same time. (Photo by 1stLt Gerard Faraa.)

their current operations. Knowing this, the HQMC Communication Directorate asked the State Department for permission to announce the deployment. Unfortunately, permission was granted by an entity in the State Department that did not have the authority to grant permission. When HQMC announced the deployment, the group fomenting unrest in the country used the resulting news coverage to imply the Marines were there to support them in their quest to overthrow the government. This caused considerable issues with the ambassador, the country team, and the associated combatant command, adding unnecessary confusion to robust interagency discussions about the next steps in the country.

While discussing this event during a professional development session, a member of the audience asked what could have been done to prevent the insurgents from misappropriating the announcement. The audience member’s question highlights the challenge of communicating core public affairs concepts to members of our force who have trained to consider adversary perspectives first. Public affairs is foremost the means of providing information about U.S. activities to U.S., ally, and partner audiences to reinforce those audiences’ trust in the U.S. government’s transparency about its activities. This practice establishes normal patterns of information availability and reinforces existing command relationships, with

the additional benefit of denying adversaries disinformation opportunities by communicating facts about U.S. military missions. In short, if the State Department communicates about Marine Security Guards, then the mission, roles, and responsibilities are normal business; if another agency communicates about Marine Security Guards, then something must be up. The lesson here is to make sure you know the normal practice and ask before deviating from it for clarity of operational responsibility and strategic risk.

Even though the standard of practice is units can release information about what they do, the authority to release certain actions may be withheld at higher levels. For example, in the early days of Iraq, if a unit had found Saddam Hussein, they were not authorized to make that announcement themselves. Similarly in Afghanistan, if a unit had found Osama bin Laden, they were not authorized to make that announcement. The act of finding those individuals—those high-value targets—served a larger goal, and the desire to get credit for performing that mission would have compromised the strategic intent of the effort.

In the last few years, we have witnessed more than a few near misses with regard to units unaware of—or violating—release authorities. Recently, the public affairs posture for all military activities above the company level in a certain country was passive. This posture was informed by the political environment and was decided at the highest levels of our government. One affiliated unit began planning activities to “message” the adversary, though the unit had not been tasked to do so. Every draft course of action included public affairs tasks, specifically press releases or some sort of public announcement. The public affairs officer reasserted the passive public affairs posture directed by higher headquarters and how it would prevent such activities, and the planners abandoned planning. The issue here is not that the public affairs posture prevented public announcements. Instead, the planners lost sight of the importance of their ongoing operational activities supporting mission requirements in a



The concept of lanes and understanding your role and your limits permeates military operations. (Photo by LCpl Anabel Abreu Rodriguez.)

country of strategic importance. The operational mission remained, but the unit did not own the strategic risk of communicating about it.

Around this same time, a Marine unit was preparing to support a deployment that was owned and planned by a sister Service. The deployment focused on relationship-building to secure access to certain locations. The other Service was concerned because Marines

are often portrayed as only a kinetic, lethal force component. While deployment guidance was in development, the Marine unit tasked with the mission created an English-language web presence announcing the deployment and published a video set to fast-paced music showcasing a kinetic portion of the Marine Corps arsenal. There are several lessons here. First, the unit did not follow the focus of the mission. Then,



Like other military capabilities, Public Affairs operates in functional and established lanes in order to achieve desired effects and prevent information fratricide. (Photo by LCpl Dalton Swanbeck.)

they misrepresented the unit's capabilities in support of that mission—which at best is the result of using previous examples of communication products that do not apply to this mission and at worst is the creation of propaganda. Finally, they did not consider the consequences of their communication activities to the overall mission and to the deploying force. Thankfully a Communication Strategy and Operations (COMMSTRAT) officer at higher headquarters found the content online before it had gained much attention and had the content removed.

The Marine Corps practices decentralized execution of assigned operational missions, but *communication always incurs strategic risk that an operational unit may not own*. The good news is that the remedy is the same. Unity of voice is as important as unity of command. Knowing and following communication guidance helps prevent information fratricide and preserves strategic intent. Public affairs guidance provides public affairs posture, release authorities, and required coordination.

Every Mission has a Main Effort

Acting within the guidance prevents duplication of efforts and ensures mission focus. If you are in a unit that is unaffiliated with and unbriefed about



Not every message needs to be amplified. (Photo by Cpl Seth Rosenberg.)

assessed the announcement to have been a missed opportunity to amplify messaging for adversary audiences and to show solidarity with the other nation by using their same words. The unit making the assessment did not have the public affairs guidance, which undermined the necessity and helpfulness of their assessment. They did not know the goals and restrictions and created inaccurate expectations among their leadership for the purpose of the mis-

U.S. equities. *Public affairs does not exist free-range and uncoordinated*. As with mission taskings, communication activities have objectives, responsibilities, and limits. Public affairs guidance nests unit activities within strategic guidance to keep those activities aligned with strategic goals.

The Balance of Many Parts

So, what can you do? Commanders typically can release information about things their unit is doing. Messaging is always a combination of two things: what your unit is doing and what your unit is saying about what it is doing. Actions and words; those two things should match. The extent to which they match establishes your basis of credibility and trust.

Military resources provide senior leaders options across a wide range of scenarios. Military actions are effective when they support operational and strategic goals. Military public affairs professionals work to communicate the activities of military components toward these goals and release information about our capabilities, our proficiency with these capabilities, and our professionalism in how we use these capabilities. The availability of this information makes us credible. We do what we say. The availability of this information over time builds trust. We will still do what we say.

Messaging is always a combination of two things: what your unit is doing and what your unit is saying about what it's doing.

a given event, there is likely no role for your unit in it. Military units are tasked with doing things. If you have not been tasked, it is probably not yours to do.

A recent example is a deployment that included Marines with another nation's military force. U.S. government public affairs guidance to the participating unit and hosting geographic commandant commands clarified the goals of communication activities, with specific emphasis on limits and approved terminology. When the deployment was announced, an unaffiliated Marine unit

mission. Not every unit is connected to every mission, and not every message should be amplified.

Another issue, that thankfully was caught, was an unaffiliated Marine unit sent a COMMSTRAT officer to the partner nation to serve as a liaison in an information cell associated with the deployment. The Marine unit had no forces participating in the deployment, was not tasked to support the deployment, was not read-in on the public affairs guidance, and the Marine was not authorized to represent Marine or

The aggregate of this information is not just the sum of the parts. Just as doing more can diminish readiness, saying more can dilute understanding. What each echelon does and says serves operational purposes and contributes to the strategic environment.

Public Affairs in the Marine Corps

Public affairs is responsible for managing relationships with publics on whom an organization’s existence depends. The word public is used intentionally. Audience implies a group of people who are paying attention, the term public reminds us that we compete for attention and must consider the information needs of those with whom we communicate. In the Marine Corps, the MOS of COMMSTRAT is an umbrella term that includes the function of public affairs along with the function of combat camera/visual information (VI). COMMSTRAT is not a new capability—it is the normalization through a structure that was already in practice. Deployed units often nested combat camera/VI assets under the public affairs officer. The public affairs officer was responsible for understanding and anticipating the VI needs of other entities. This knowledge was gained through membership in the Information Operations Working Group and other gatherings.

COMMSTRAT aligns the information-related communities of public affairs and combat camera to commanders’ operational mission requirements. Operational missions focus on activities that occur outside the United States and may affect ally, partner, and adversary communities. Public affairs professionals bring much to the table, importantly an awareness of what may already be occurring in the media environment that may affect mission success. But public affairs cannot only serve tactical requirements, as they are still responsible for providing information to the public regardless of adversary posture or contingency mission.

The incredibly nuanced but important distinction to note between public affairs and other information-related communities is public affairs is not adversary-focused. Where there is an

occasional need for public affairs to coordinate with other information-related capabilities, it is a matter of process, not organization. Most public affairs doctrine and policy note the need to protect the integrity of the public affairs by keeping it separate from other infor-

Just because you can see a play ... does not mean it is yours to call.

mational efforts aimed at manipulating perceptions. Current publications maintain the requirement that public affairs and psychological operations must be separate and distinct even though they reinforce each other and involve close cooperation and coordination. *Secretary of the Navy Instruction 5720.44C* states,

Commanders will not use or allow information activities or deception operations intended to disinform, deny releasable information to or mislead the U.S. public, the government, or the U.S. and international media. This includes misinforming the media about military capabilities and intentions in ways that could influence U.S. decision makers and public opinion.

Army Regulation 360-1 states, “The PAOs and their staffs will not initiate or conduct psychological operations and will not permit PA resources to be used to support such activities.” Finally, *Air Force Instruction 35-101* states,

During military operations, commanders leverage information to affect the perceptions, attitudes and other drivers of behaviors of relevant actors. PA supports that effort by participating in the joint planning process to develop communication strategies that truthfully inform key publics and relevant actors about military capabilities, intent and resolve.

Leaders need to preserve the flow of information to friendly audiences even as they support mission requirements against adversaries. Just as we work out regularly to maintain physical fitness, so public affairs provides information routinely to maintain a relationship with

the public and preserve the foundation of understanding and credibility necessary to our operational success.

Consider a non-military comparison. McDonald’s conducts marketing, promotional, and public relations activities to support maintaining relationships with employees, franchise owners, suppliers, customers, and regulators (i.e. publics on whom their existence depends). They are not directing those activities against Burger King and Wendy’s because their existence does not depend on the opinion or support of their competitors. That is not to say businesses do not conduct competitive analysis, but that is a different part of their organization. Public communication targeting their competitors would be a waste of resources, completely ineffective, and likely counterproductive. Instead, they use their resources to draw attention to the value they bring to the informal eating-out market.

It is the same principle in the military. Public affairs activities provide the necessary baseline of credibility for everything the military does. We cannot take the sentiment of our stakeholders for granted; relationships require routine maintenance, and the publics with whom we interact or who are impacted by our actions deserve to be kept informed about what it is we are doing.

Summary

As with the football team on the field, communication is essential to a shared vision, complementary effort, and mission success. Just because you can see a play in the information environment, does not mean it is yours to call. Check the guidance. If you are tagged in, play the position you trained for, the position on which the team relies.



Network Technology

Innovation for national security

by CIV Michael Cirillo

As the colloquialism goes, modern problems require modern solutions. One modern problem is the erosion of the United States' technological edge. The modern solution is to leverage new, nascent, or envisioned technology to accelerate or revolutionize our technology—specifically for this article, our networks. This network revolution uses electronics, computers, and information technology (IT) to automate production and digital data as a commodity.

The point here is not to suggest we make new, interesting gadgets or a clever “app for that.” The foundation of our modern lives and its concomitant security is the United States' singular global stage advantage. We invented the Internet, and that network is increasingly both vital and critical to our national security and, by correlation, to our daily living. That advantage, seen as eked away by actors in a contested global dynamic, is noticeably decreasing.

What underscores our advantage is what the 2017 *National Security Strategy* refers to as the National Security Innovation Base (NSIB). The NSIB consists of the whole of American entrepreneurs, companies, industries, universities, research laboratories, and government agencies acting as a network [sic] of people, knowledge, and capabilities to keep America safe. To get this revolution into high gear, we need the levers of national power to focus our NSIB on what technology to pursue and where we can apply our national innovation resources.

This course of action should occur not through pursuit of stagnant and staid ideals that may raise the bottom to the middle, but stalwart, scientific approaches that heighten the skies into which we can strive. If we see national security as the umbrella under which we

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enable, nurture, and succor all other national activities, we can pursue technological progress to enhance our national security. Armed with this strength of purpose, our innovative powers foster and propel the industrious, entrepreneurial, and studious to create a tide that lifts all boats.

Context

Yet, lest we fall short of this strategic security intent and that our Nation's advantage should continue to decline, we would find ourselves with a di-

minished position on the world stage. This diminished position dissolves our security, identity, and “pursuit of happiness.” To that end, we need to understand that IT does not cease evolving. Marshalling for a revolution is the method to put the brakes on our decline. Regardless our course of action, we should also know that both our allies and adversaries will make their own progress revolutionizing network technologies.

digital networks provide the connective tissue. Many things are connected to “the network” and many more of them are themselves newly connecting to the network. The following five areas highlight how tomorrow's network is different from today. Despite being somewhat predictive and potentially disruptive, only five means this is not an exhaustive run-down but a small representative treatment of major developing trends and impactful ones, too. Those areas are Internet Protocol version 6 (IPv6), advanced computing, advanced networking, network edge densification, and space networking. Not only will these technologies affect

Nothing connects to the Internet or any digital network without an Internet Protocol address. IPv6 is replacing IPv4, which has been in place for approximately forty 40 years.

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IPv6

Nothing connects to the Internet or any digital network without an Internet Protocol address. IPv6 is replacing IPv4, which has been in place for approximately forty 40 years. IPv4 helped birth both the Internet and World Wide Web. However, with more than 100 billion devices connected to the Internet, we are simply out of IPv4 addresses for

today's demand. It is also impossible to meet tomorrow's demand for addresses without changing to IPv6. Hence, for example, the DOD's ongoing transition to IPv6.

Leveraging chip manufacturing to explain the impact of IPv6, there is a growing dearth of global chip manufacturing capability and capacity. Chip shortages are even making common news cycles. However, we may be at the verge of experiencing a chip shortage the likes of which we cannot quite imagine. We may be barely scratching the surface of chip demand due to the migration to IPv6. For the things needed to operate, manage, and support devices that need chips, there are second and third order market effects. A catch phrase applies here: IPv6 will cause everything else not connected to become connected to the Internet. Thus every device needing or potentially needing to connect to the network will require a chip to do so and an IPv6 address

IPv6 addressing meets the definition of exponential. IPv6 could provide over 1500 addresses per square foot of the Earth's surface, which strongly suggests we need a lot more chips. Those chips need form factor specific and manufactured frames to house them, connect them with purposive electromechanical processes for other chips and logic circuits, and all this needs power, metal, and plastic. We need oil to make plastic, ores to make metal, and we need dinosaur fuels, nuclear, or some combination of air, water, and solar power to energize and keep cool all those new chips.

As a result, we may be grossly underestimating the IPv6 impact on the future of networking. We very well could be on the verge of an entirely new market sector. Not just a niche but an entirely new area of growth. Much of this has yet to be imagined or manifested into businesses. However, as traditional areas expand into this new space, new opportunities will explode onto the scene.

For warfighters, we are still working through the technical particulars and crafting the right policy to support implementation and sustainment of the overall transition. The DOD's military Services are involved in IPv6 planning,



In the future, we will stop using these. No, not the masks, the IPv4 Subnet Mask 255.255.255.0. (Photo DVIDS.)

development, and implementation. In the end, the U.S. military could use these new IPv6 technologies, as would our allies and friends. What is key to understand is that adversaries and nefarious actors are sure to use them against us.

Advanced Computing

Although broadly stated, we are specifically speaking of computer processing power. Laptops and similar portable devices are evolving from a reliance on central processing units (CPU) and disk drives to graphics processing units

(GPU) and solid-state drives (SSD). Hardware functions faster than software and, over time, heavy data processing like graphics, math, and artificial intelligence needs get off loaded to GPUs. This enables CPUs to perform traditional processing functions like software applications and interweaving basic functions with incredibly advanced parallel mathematical functions only GPUs can handle. GPUs are overshadowing CPUs and the same is occurring for SSDs. SSDs do not have a spinning disk, creating massively less friction and heat than regular disk



Excellent hand/arm signal but difficult to see from 23,000 miles away. (Photo DVIDS.)

drives that help them survive better and live longer.

The U.S. military can leverage GPUs to accelerate our adoption of artificial intelligence and prepare ourselves, ultimately, for quantum science, computing, and cryptography. However, by taking this middle ground between old-fashioned CPUs and quantum computers, devices harnessing the power of GPUs can deepen our ability to process and manipulate data today. SSDs and GPUs readily support massive data crunching and not tethered to fixed installations. We can leverage SSDs and GPUs to improve our networks so that the transition of warfighting capabilities between environments is seamless. Adversaries are already using GPUs and SSDs; by not adopting their use with a sense of urgency, the result could be our losing our data processing advantage.

Advanced Networking

Advanced networking will rely on time to an even greater degree than today. A glorious, inherent feature of the Internet is its adaptability to communication interruptions. Through protocols like IPv4 and IPv6, this feature is built into the fabric of Internet. This fabric is evolving to meet the massive proliferation of devices and types of devices and how the reliance on realtime is increasing. We experience latency when clicking on a network-reliant resource, especially distant ones, but as exponentially more devices awaken on the network, the only way to prevent a simultaneous increase in latency is to increase both the reliance on realtime and the ability of networks to function in realtime.

Realtime functions can reduce device wait-time to nearly zero. If we also eliminate retransmission and recovery of network data, we can save energy, reduce heat, and ease friction, all of which increases robustness. One example of realtime networking is our increasing use of autonomous devices and systems. The proliferation of independently functioning devices means these devices must function without human control, hence function much more quickly than if by human control. The future network must be able to sup-

port this autonomous functionality. To do so, such a volume of interconnected devices must come to rely even more on realtime.

Knowing the exact time information arrives is incredibly useful. Devices, or weapon systems, will coordinate in realtime across disparate network segments and do so undisturbed by latency, including that caused by or potentially caused by human or machine interaction. Understanding that adversaries can and will leverage this future capability for their devices and future networks is an important factor for maintaining our advantage. Most systems today would not function very well in a future network; we must reengineer these systems or remove them from the network.

Advanced networks will enable a decrease in situations where humans are a decision maker. Humans can then focus attention on higher level thinking where wisdom and intuition function. Increasing the reliance on time sensitivity also increases the significance for maintaining timing. It is better that our weapon systems function faster than their weapon systems. This precision engineering does not require machines to learn, but the networks through which these devices must function must instead comply with absolute timeliness. Think of closing a margin of error but through the prism of time.

Network Edge Densification

Network edge densification means everything is increasing to the using limit of a network: numbers of devices, capabilities of devices, the needs of devices, and the traffic they create. Cynics might say this sounds anti-cloud or centralization, but the reality is that devices constantly improve even as they increase in numbers. Although no longer literally so, Moore's Law is still functionally relevant. As IT improves, miniaturizes, new compounds are created, capacities and capabilities always increase. Devices exist primarily at the edge because that is the point of need. Whether or not a human is network-connected, relevant actions and use occur at the networking edge. These relevant actions also occur for non-human devices functioning col-

lectively or autonomously. One of the very reasons to have a network is to connect disparate, distant edge devices and humans.

The in-vogue trend for data centralization is via cloud computing constructs. However, network congestion or other bandwidth limits are causing growth at the edge. Given this cloud-centric, but time-relative irony, the need for data precision at the human or device network edge is increasing. The future network is such that dynamically functioning devices will rely on each other vice central control. Precision timing requires distributed functionality (at the edge) and a network more robust than today. Today's trendy view is that the network simply needs to get faster so that reliance on cloud access can improve, as if moving data and services further from the point of need does not also increase the reliance on a more robust network. As IPv6 causes the emergence of new terrain at the network edge, centralization increases latency at the network edge and eventually stymies development of the future network. The sheer volume of data required to traverse diverse networks to a cloud environment is counterintuitive to inevitable edge densification.

We cannot merely wait for newer network topologies, protocols, and IT. They do not come fast enough to over-



Early Marines conducting pre-space networking. (Photo: Marine Corps recruiting poster by J.C. Leyendecker, 1917.)

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come anticipated near-term network congestion and other bandwidth limits. In thinking of the future network, IPv6 will enable an almost inexhaustible number of devices and these devices will generate a truly immense amount of data. It is unreasonable to think that all these devices will direct all this data to a distant cloud environment. Real-time processing is optimal closest to the point of need—at the edge. We can maximize warfighting effectiveness by eliminating latency caused by geographically disparate cloud connections and by focusing processing nearest the network edge.

This point is especially true for warfighting systems that are always producing data for warfighters at both the network edge and at the battlefield edge. Warfighters that can process, store, and analyze data in realtime, at the edge, will have the upper hand in realtime combat and in near realtime combat support operations. Any latency caused by having to traverse the network is antithetical to using smart networking. We should design our future network for the advantages gained from network edge densification.

Space Communications

The phrase alone conjures images of the Jetsons cartoon or Star Wars movies, but the reality is we are already using space-based networks—albeit nascently. The future network will rely on space communications for very fundamental reasons that include geographic proximity, specific applications, and meeting realtime needs. Low-earth orbit satellites are in play as future network capabilities that will greatly enhance warfighting communications by reducing the latency of traditional networks. Because space is everywhere above us, satellites are generally available directly above the point of need and in locations where traditional networks do not function or cannot function well.

Space communications will enable realtime warfighting operations where basic physics almost entirely mitigates space-to-earth linkage latency. This is because, instead of circuitous terrestrial fiber routes, space communications are transmitting at the speed of light via

lasers. Research is occurring to develop this aspect of the future network. While one could describe this as “wireless,” an optical space communication network will use free space optics. Free space (air, outer space, vacuum) is the communication channel between transceivers that are line-of-sight. The design and build of space communications comes from its unique view from space to ground. This view enables space communications to reduce transmission hops. This directness is not possible with earth-bound fiber optic networks.

When it comes to space communications, the United States has three advantages. One is that our government is particularly able to marshal resources to incredible ends and our leadership and leading technology in space helps us retain our advantage. Secondly, the satellite industry, primarily U.S. centric, see commercial advantages to space networking or a new Internet variant in space. Adversaries will find it difficult to obtain both advantages simultaneously. Thirdly, Elon Musk and his ilk are public advocates of space networking and strong narratives carry gravitas within the NSIB.

Summary

The future network is coming. Our adversaries will bring it. Best that we already have it. An enlivened NSIB can revolutionize networking, but only if we envelope our approach with a strategic national construct of innovation for security. As it is the very fabric of our connectedness, network technology is a driving force for innovation needed to slow the dissolution of our global advantages.

IT will always evolve. We have the capability to shape its growth and to steer technology as one would for watercraft on a gently lifting tide. On the other hand, we could find ourselves amidst turbulent seas and caught between making Sophie's Choice types of in extremis decisions to meet emergent national security demands and emergencies.



The Marine Corps Needs a MAID

Pursuing a truly expeditionary, medium-ranged surface-to-air capability.

by Capt Christopher "Pink Sheets" Lowe

With the 38th Commandant's Planning Guidance shifting the focus of the Marine Corps to expeditionary advanced base operations (EABO) in the Pacific and identifying critical gaps in capabilities necessary to future operations, two of the most critical capability gaps are the lack of long-range surface-to-surface fires (landbased and anti-ship) and the lack of medium-range surface-to-air fires in the Marine Corps and U.S. arsenals. The Marine Corps is already addressing the long-range surface-to-surface fight by divesting in the M777 Howitzer system in favor of the M142 HIMARs and the Remotely Operated Ground Unit Expeditionary (ROGUE) Fires unmanned platform.¹ Having a medium-range air defense (MRAD) system capable of anti-cruise missile operations that can be rapidly deployed in an expeditionary manner is vital to the conduct of EABO. The defense of these expeditionary advanced bases (EAB) across the Pacific inside the adversary's weapon engagement zone (WEZ) requires a numerous, maneuverable, and cost-effective system. The current Marine Corps program that seeks to fill the MRAD requirement is the Medium Range Interceptor Capability (MRIC) is unable to satisfy the expeditionary requirements of EABO. To fulfill the requirement for expeditionary air defense required for EABO, the Marine Corps should develop the Medium Air Intercept Defense (MAID) system based on the ROGUE fires platform.

Current Marine Corps ground-based air defense assets consist solely of the short-range air defense FIM-92 Stinger system and cannot fulfill the

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The Marine Corps program to fill the medium range air defense gap is the Medium Range Interceptor Capability based on the Israeli Iron Dome system. (Photo by David Huskey, U.S. Army Program Executive Office Missiles and Space.)

medium-range anti-air/cruise missile requirements of the EABO concept. The Stinger system is incredibly capable against fixed wing, rotary wing, and unmanned targets.² However, the system is untested against a cruise missile threat and lacks the range and enhanced target acquisition capability required to intercept an inbound high-speed missile. The Marine Corps proposal to solve this capability gap is the MRIC, based on the Israeli Iron Dome system. The Iron Dome has protected Israeli civilians and infrastructure with a high average intercept rate of 90 percent. This success rate is reflective of single and

multiple intercepts, such as the May 2019 mass rocket barrage where 86 percent of incoming rockets were successfully intercepted.³ Despite being a capable MRAD system the MRIC does not meet the Commandant's direction for a "modern, sophisticated air defense capabilities to include those capabilities which are required by our forward-deployed stand-in forces for persistence inside the adversary WEZ."⁴

The MRIC's lack of expeditionary mobility is the critical vulnerability of the system. The current Iron Dome system must be transported by heavy truck and emplaced in a stationary position,

which increases the time required before becoming operational and displacement time after conducting engagements.⁵ The size of the current system also necessitates aerial transport by C-130 or seaborne ship-to-shore connectors. If the MEU commander decides to not embark on such a large system, as has happened in the past with tanks, then transportation by C-130 airlift is the only option for rapid deployment of the MRIC system.⁶ On the other hand, if the MRIC is embarked on amphibious shipping, the MRIC can only be inserted into the objective area via seabased ship-to-shore connectors. These transportation restrictions limit the MEU commander on the employability options of the MRIC as he must prioritize islands large enough to support a C-130 landing site or have beaches suitable for landing heavy equipment. This enables the opposing force the ability to narrow down possible employment sites to very few possibilities as they occupy or are occupying the majority of airstrip-capable islands in the South China Seas.⁷ The size and speed of the MRIC make it too cumbersome for EABO.

The lack of commonality of the MRIC system with other Navy and Marine Corps systems increases the cost of filling the MRAD gap and the logistical footprint of the MRIC system. Supplying multiple EABs inside the contested areas within the WEZ of an opposing force will place a strain on logistics that has not been felt by the Marine Corps since the Guadalcanal Campaign of 1942.⁸ None of the major subsystems of the MRIC (vehicle, launcher, missile, fire control radar, command unit) have commonality with anything in the United States inventory except for the Iron Dome systems being acquired by the Army.⁹ The lack of commonality of system maintenance parts and the Skyhunter missile will place undue stress on the logistics train by reserving precious cargo space for a single system.¹⁰

The more expeditionary solution to the MRAD capability gap is the MAID which utilizes commonality amongst Navy and Marine Corps systems. The MAID would be a variant of the ROGUE fires system that the Marine Corps is already developing for long-



The Light-Marine Air Defense Integrated System (L-MADIS) provides both kinetic and non-kinetic defeat capabilities to destroy or negate aerial threats. (Photo by Tia Dufour.)

range surface strike and anti-ship cruise missile fires. The weapon modification to the ROGUE would be the replacement of surface-to-surface missiles with a commonplace MRAD missile, such as the RIM-162 Evolved Sea Sparrow Missile (ESSM). Additional software would allow fire control updates to the system software to allow for surface-to-air fires and integration with the Marine Air Defense Integrated System (MADIS). The development of this platform would address the issues of expeditionary employment and the lack of commonality with Navy and Marine Corps Systems.

In the EABO concept that focuses on speed and concealment having a light, mobile platform is a priority. The MAID would be based on an unmanned Joint Light Tactical Vehicle (JLTV) chassis of the ROGUE. The smaller size of this vehicle allows for easier transport in a C-130, external lift by CH-53 heavy-lift helicopters, and easier storage on amphibious shipping.¹¹ This enables the MEU commander to embark more MAID firing units compared to MRIC and allows for more diverse insertion and transportation options. Small enough to be deliverable by CH-53, the MEU commander is able to place the MAID on any piece of land that a helicopter could land on. This provides the MEU commander

more flexibility as he is less restricted by terrain size and has more options for transportation when employing the MAID in EABO.

By being developed from an already current Marine Corps program and utilizing a proven anti-cruise missile weapon, the MAID also solves the issue of commonality amongst Navy and Marine Corps systems. By utilizing the JLTV chassis, the MAID would be able to draw on qualified maintainers from other elements among the MEU as well as repair parts. For the Low Altitude Air Defense Marines operating the MAID, there will also be the added benefit of system commonality with the JLTV-based MADIS.¹² The benefit the MAID would bring to the EABO logistics dilemma would be using the ESSM, a medium-range missile that is proven against anti-ship cruise missiles that are already proliferated throughout the fleet.¹³ This will provide a depth of magazine for the MAID and common understanding with the Navy that will enhance the naval integration inside the WEZ.

A counterpoint to the development of the MAID would be that the Marine Corps has already invested in the MRIC system and would incur a significant cost to switch development. However, the costs of MAID development would

be lower than MRIC as it benefits from the ROGUE (for base chassis and system) and MADIS development programs (for air defense specialization, fire command software, and Link-16 integration). By using the common JLTV platform, maintenance costs will be less than a unique fires platform, and the selection of the ESSM ensures a deep magazine of capable weaponry that does not need to be developed from an initial concept. The MAID also adds the possibility for future modifications to carry long-range air defense and even anti-satellite/anti-ballistic missile capabilities by being modified to carry the RIM-66 Standard Missile (SM-2/6 for air defense, SM-3 for anti-satellite/ballistic missile) already in widespread use by the Navy.¹⁴

To fulfill the requirement for expeditionary air defense required for EABO, the Marine Corps should develop the MAID system based on the ROGUE fires platform. The capability the MAID can bring to the Marine Corps will enable MRAD of the EABs vital to the operations in a contested environment. The Marine Corps has long neglected MRAD and now that the near-peer fight in the Pacific theatre is rapidly approaching, it must solve the capability gap. The MAID will enable expeditionary air defense at range down to the MEU level in a way that can be rapidly employed around the world, off of multiple platforms, and scaled to future requirements.

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MIG Coastwatchers

Stand-in Informational Forces

by GySgt Jeremy A. Kofsky

The battle, and eventually the war, would be lost. A regime of economic and dogmatic oppression would soon engulf the Pacific Island chains, threatening supply lines, creating a bastioned, layered defense system, and making a counteroffensive virtually impossible. This is not an imaging of the future but a simplistic view of the Pacific theatre in 1942. While there were several reasons and valorous acts instrumental in turning the tide of the Pacific campaign, one of the most overlooked and consequential actions was the use of a small group of Australians and Pacific Islanders known as the Coastwatchers. The Coastwatchers were critical to developing an understanding of the informational battlespace for task force commanders in advance of operations in the South Pacific and providing early warnings of attacks on strategic bases, such as Henderson Field on Guadalcanal.¹ An updated conceptualization of the Coastwatchers' operations—leveraged against expeditionary advanced base operations (EABO) and the tenets of Stand-in Forces, with the organic capabilities of the MEF Information Group (MIG), and the use of alternate insertion platforms, specifically aerial delivery of Task Organized MIG Information Sensing Teams—can yield similar advantages in the modern and future eras of military competition.

The Marine Corps, and in turn, their Naval, national, and international partners, has the ability to define or understand the tactical and strategic levels of operations through a combination of various intelligence collection platforms and capabilities.² There is a gap, however, in the combination of intelligence, understanding the information battlespace, and shaping the battlespace at the operational/strategic level—es-

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pecially in the critical shaping and pre-deployment phases of operations. In line with the *Tentative Manual for Expeditionary Advanced Basing Operations*, the goal of the commander should be to leverage, to the fullest capability, an all-domain Common Operating Picture/Common Intelligence Picture and leverage joint effects/fires to fulfill mission goals.³ By updating the example of the Coastwatchers with pre-existing organic MIG personnel and capabilities, and combining with offset aerial insertion capabilities, this perceived gap can be filled and become a critical strength to the supported commander.⁴

bersome radios to relay Japanese aerial and naval movements in the area to create overmatch towards Japanese units even though the Allied units were vastly outnumbered and lacked sufficient capability to support all operations in the area.⁶

The defining of the battlespace provided by the Coastwatchers enabled decision advantage in the Southern Island campaign to achieve victory.⁷ The MIG is comprised of various units utilizing information-related capabilities to achieve similar desired battlespace effects in a modern operating environment. Specifically, intelligence and

The Coastwatchers were Allied military intelligence operatives ... stationed on remote Pacific islands during World War II to observe enemy movement ...

The Coastwatchers were Allied military intelligence operatives, primarily pre-staged Australian civilians or induced Australian military personnel, stationed on remote Pacific islands during World War II to observe enemy movements and rescue stranded Allied personnel.⁵ They played a significant role in the Pacific and Southwest Pacific theatres, particularly as an early warning network during the Guadalcanal Campaign. They relied on the support of indigenous personnel in the Southern Island Chains to carry cum-

radio battalions provide intelligence collection and analysis, Air Naval Gunfire Liaison Company provides integrated fires support, and the communication battalion provides a robust communications setup designed to integrate various units and capabilities in a secure and survivable manner. By focusing a new operational viewpoint of core components of these respective units, subordinated to the MEF command element/task force commander, a further winnowing of the perceived gaps in intelligence and fires integra-

tion in an EABO environment can be realized.

It is critical to note the use of this updated Coastwatcher concept is not seeking to take the place of Battalion or Force Reconnaissance units/operations. Reconnaissance focuses on the physical aspects of the battlespace (bridges,

vantage by the task force commander. While traditional Marine Corps reconnaissance units have to be close to their target to achieve desired results, the use of an information sensing team in the Coastwatcher makeup also can benefit the task force commander by closer proximity to potential areas of

enable these new Coastwatchers to inform timely and effective decision making at the outset of conflicts to further enable sea control through informing and shaping the battlespace.

The great leverage point of the MIG is the use of various disparate capabilities and personnel to achieve a synergistic effect on the battlespace. Recent experiments of the MIG Concept such as Task Force Ellis in PACOM and the II MIG deployment aboard the USS *Herschel "Woody" Williams* in 2020 show the integration achievements a Task Organized MIG unit can achieve in an EABO Environment.⁹ The Coastwatcher MIG units would be similarly constructed by combining entities from throughout the MIG to create a functioning and sustainable information sensing and battlespace defining apparatus. The Coastwatcher unit would seek to be inserted into the operating battlespace by means of pre-deployment by deploying for exercise/training oper-

The Coastwatcher MIG units would be similarly constructed by combining entities from throughout the MIG ...

roads, and other critical infrastructure) mainly through the use of onsite physical observation of the noted objective.⁸ This covers one of the three battlespace domains, the updated Coastwatcher covers down on the informational and cyber domains of the battlespace, with enough foresight to enable decision ad-

operation. Being able to understand the human terrain, electromagnetic spectrum, and serving as a liaison point for naval and aerial fires are all enhanced by closer proximity to the population. The use of EABO modalities, namely the deployment for exercise/training or offset aerial insertion capabilities can



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ations with partnered nations, either as a sole unit or as part of a larger operation/exercise. Alternately, once the threshold for hostile acts appears to be nearing, an aerial delivery operation, consisting of two task-organized teams with an overall headquarters element, could conduct aerial insertion operations to quickly achieve similar battlespace effects and understanding.

MIG Coastwatcher Unit

Combining organic Marine Corps intelligence assets in Counterintelligence/Human Intelligence and Signals Intelligence would feed into the overall CIP supported by other MIG and MEF assets, such as intelligence, surveillance, and reconnaissance (ISR) aerial assets. Tactical counterintelligence/human intelligence and signals intelligence collection methodologies require the collector to typically be within the actual operating environment to provide the quickest feedback to the task force commander and thereby enable a quicker and more decisive decision-making cycle. The Air Naval Gunfire Liaison Company component would be able to achieve battlespace effects via naval and joint fires when necessary to achieve maximal effects. Finally, the communication assets of the team would be able to provide a robust primary, alternate, contingency, and emergency communications plan capable of operating in the contested electromagnetic battlespace of large-scale conventional operations. The headquarters element would reside within the task force commander’s command element and would be responsible for analyzing information, coordinating targeting information, and providing command, control, and logistical coordination for the Coastwatcher unit. Historically, all the above describe units and personnel have had jump programs in support of other units, typically reconnaissance.

The goal of the MIG is to provide all-domain battlespace awareness, control, and shaping capabilities to the task force commander through the use of all-domain integration and interoperability with various allied and naval units. In line with the Commandant’s *Concept for Stand-in Forces*, the new Coast-

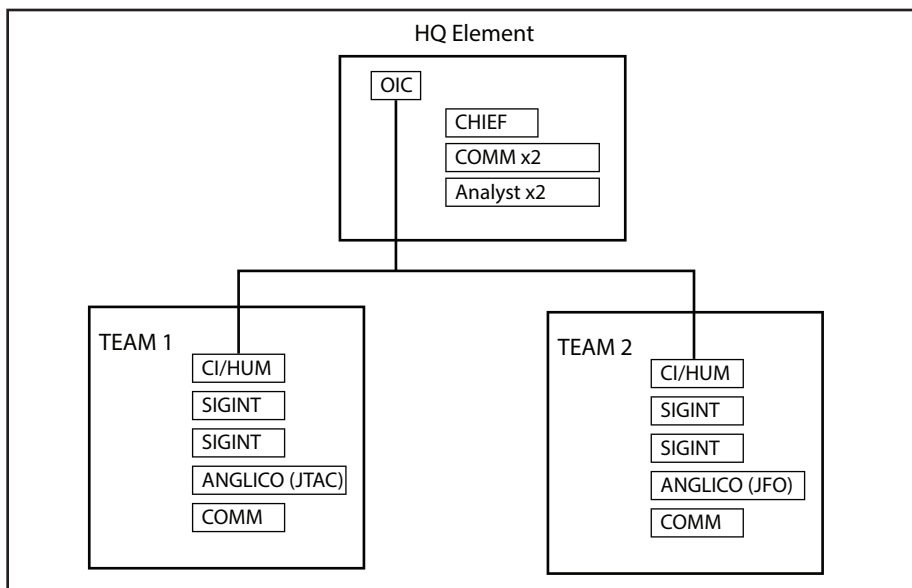


Figure 1. (Figured provided by author.)

watcher unit would be able to integrate and work with partner-nation forces to provide security, information, and logistical support. This would lighten the overall footprint of personnel on the

The goal of the MIG is to provide all-domain battlespace awareness ...

ground and allow for better counter-reconnaissance activity and masking of actual operations and intentions of the task force commander. While the Coastwatchers were a Pacific unit, the use of capable shaping and sensing forces in Europe, the Middle East, Africa, or wherever the Marine Corps seeks decision advantage will serve as a decisive advantage to the supported commander.

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The Best of Both Worlds

Integrating Navy and Marine Corps intelligence

by Capt Jesse B Schmitt

Military intelligence, as the joke goes, is a contradiction in terms. But, as in most things, snarky one-liners often reveal misunderstandings more than they provide useful commentary. Intelligence forecasts are never certainty, and any analyst that advertises them as such should be disregarded. The value of intelligence forecasts is in their ability to serve as a starting point for planning and to inform decision making on the part of the unit commander. As the Marine Corps begins to reform itself in order to conduct expeditionary advanced base operations (EABO), so too must Marine Corps intelligence change in order to effectively support their commanders. The basic techniques are not going away: the targeting cycle, collections processes, and map-making remain relevant. However, they will not enable EABO on their own without the knowledge and expertise to make them relevant to the maritime domain. If the Marine Corps is to have credible effects in maritime terrain to support the fleet, it must understand maritime terrain and naval actions, and Marine intelligence must begin to develop a strong foundational understanding of Naval Operational Intelligence Afloat.

MCDP 2, Intelligence, describes two distinct classes of intelligence: descriptive and estimative.¹ Descriptive intelligence can be reasonably summarized as encyclopedic information. How many ZBD-05s exist in a battalion, the effective range of a DShK heavy machine gun, and the weapon systems associated with the Jiangkai-II FFG are all examples of descriptive intelligence. But beyond perhaps familiarity with classified research tools, intelligence profes-

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sionals do not have any special purview over the answers to those questions. Any dedicated military member with a clearance can access descriptive intelligence.² Intelligence officers regularly have the most common adversary assets memorized but more often will admit to having a reference guide close at hand for when memory fails. The greater value is assigned to the second class of intelligence, estimative intelligence, which seeks to anticipate a possible future—or several possible futures—by evaluating the past and present. Marine Corps staffs everywhere use these predictions as a matter of habit; the enemy's most likely course of action and enemy's most dangerous course of action are examples of estimative intelligence that serve as the basis for the entire Marine Corps Planning Process.³ These concepts are still going to be essential to staff planning, but the knowledge and experiences that inform them must change.

The Battle of Guadalcanal is often held up as a historical example of EABO in action. The Navy initially delivered Marines ashore to seize a beachhead, which quickly led to the establishment of an airfield. Even with all three elements of combat power (air, land, sea) working in concert, the Japanese Navy forced the U.S. ships away from the island and began bombarding the shorebased ground and air forces. With

the support of groundbased aviation, which was defended by Marine infantry ashore, the Navy was eventually able to regain maritime superiority, setting conditions for the eventual securing of the entire island. Overlaying the 2019 *Commandant's Planning Guidance*, though, would add another requirement to the story.⁴ The landbased Marine element, rather than simply defending Henderson Field from land attack, would have also been tasked with disrupting and denying—on their own—the maneuver of the Japanese Navy.

Advances in technology make the distances associated with naval fires and maneuver exponentially greater, so Marines ashore must be able to sense farther, fire more accurate weapons, and persist much longer. The technological requirements are manifold, and the development of a naval fires solution is better left to a different article. However, even a modern Marine unit—currently explored in the Marine Littoral Regiment (MLR) concept—with the benefit of 21st century technologies and sensors does not have the organic expertise to understand and appropriately plan against a naval adversary the same way it does a groundbased opponent.⁵

Navy intelligence begins from a different place than the Marine Corps. Marine Corps units prepare for a future hypothetical high-end conflict; Navy intelligence shops engage with the real-world daily actions of adversary navies. Where a Marine Corps intelligence analyst might try to glean tactical knowledge from grainy overhead imagery of an adversary amphibious exercise, N2 divisions on ships around the world study the regular deployments of Chinese and Russian fleets in their specific

areas of operation. Navy intelligence is already well versed in intelligence analysis during competition vice conflict. Junior intelligence Sailors learn to understand tactical dispositions, seasonal patterns, and indications and warnings of naval activity as part of routine on-the-job training. A major part of career progression for intelligence specialists is the advancement in these skills and rigorous internal boarding process to test their expertise. Unless a Marine has the chance to serve in a liaison billet aboard ship or with a fleet or strike group staff, they will likely never gain the exposure to those skillsets, much less have the ability to develop them organically. Those skills are precisely those required in order for Marines to make informed decisions in contested littoral environments. Marine commanders will need to know *if certain civilian vessels can be used for the transport of military assets or not*, or whether *the presence of an intelligence collection ship is normal in a particular operating area*, or what *the warning signs are for the impending deployment of an enemy aircraft carrier task group*.⁶ If the Marine Corps relies solely on the Navy to be fed these priority intelligence requirements, they will find themselves vulnerable to a seemingly unpredictable and unknowable enemy once conflict begins and *the resulting C2 degraded environment sets in*.⁷

There are concrete steps that the Marine Corps can take in order to help Marines develop these skills. The first, which has arguably the most potential but requires the most institutional effort, is some level of integration between the Marine and Navy intelligence curriculums at the Navy Information Warfare Training Center-Dam Neck. As the longtime home of enlisted and officer basic intelligence training, integration of the FMF intelligence enterprise should begin at the start of young Sailors' and Marines' careers. Basic intelligence courses should be integrated, even if only for a small portion of the curriculum, forging blue-green intelligence teams from day one in the schoolhouse. While the intelligence community often prioritizes on-the-job training rather than schoolhouse instruction, this provides the second opportunity

for additional development: The Marine Corps can, and should, formally begin integrating into the Navy's Information Warfare Officer qualification program to develop and demonstrate the diverse skills required for operations in the information environment. Units can, specific to their own area of operation and operating patterns, develop in-house training programs that culminate in comprehensive boards with appropriate ramifications for billet progression and promotion. The Marine Corps need not develop the exact same program with the exact same requirements but allowing for Navy warfare qualifications to reflect on a Marine's Master Brief Sheet would be an appropriate first step. A second step would be mandating that all MEUs provide manning to operational intelligence information fusion centers and watch floors while afloat as part of the Navy's INDIA component command. Marines do not need to be fully folded into the component warfare command construct, but there is no better way to gain appreciation for maritime activity than to be immersed in the problem set on a daily basis while forward deployed. Finally, as EAB and MLR units develop, appropriate billets can be created to force further integration. An MLR S-2 shop could easily include at least a single Marine, staff non-commissioned officer or above, who has served for at least one year in an amphibious squadron and earned the appropriate warfare qualifications. That Marine then becomes responsible for passing on the skills and knowledge they have learned to the rest of the S-2 shop, begetting a newly developed Marine warfare qualification program and providing an exponential return on the naval intelligence investment.

If Marine units are expected to provide effects in the maritime domain, Marine Corps intelligence must develop the contextual understanding of naval operations required to inform planning and commanders' decision-making. There are ways to develop that knowledge, the most accessible of which is to mirror the way the Navy develops young intelligence sailors. This is not to say that Marines must become subject matter experts on individual bits

of naval minutiae, but they must have enough understanding of naval maneuver that they can "evaluate the past and the present and ... seek to anticipate a possible future."⁸ There will be appropriate technological advancements as *Force Design 2030* progresses, but they require equally important advancements in education and understanding for them to be relevant.

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Quantum Technology

Impacts on cyber operations and future military conflicts

by Capt Caleb A. Lawrence

Since the Industrial Revolution in the 1700s, technology has advanced at a rate far beyond what human history has ever seen, with more technology being developed in the 50 years after the industrial revolution than what was developed in the hundreds of years before it. Classical computers were first developed in the mid 1900s; these computers were monoliths of such size that made the thought of individual use or ownership impractical. In 2021, nearly everyone has their own computers and vast quantities of these computers are so small that they can fit in your pocket. Quantum Computers are currently assessed to be at this initial, “too large for the common person to own,” phase by 2030.

“There was an enormous amount of effort put into fixing the Year 2000 bug. You’ll need an enormous amount of effort to switch to post-quantum. If we wait around too long, it will be too late.”¹

—Peter Shor (Creator of Shor’s Algorithm for Quantum Computing)

Quantum computers represent only a fraction of what can be accomplished with quantum technology; quantum computers and quantum technology operate millions of times faster than the computers we use today. This will have

>Capt Lawrence is an 0202 MAGTF Intelligence Officer who was stationed with the G-2 of 3d MLG as the production and analysis officer in charge, which is where he first started looking into the impacts quantum technology was going to have. After reading various books about quantum and conducting personal research, Capt Lawrence decided to sign up for a few courses with the Massachusetts Institute for Technology to look into quantum algorithms for cybersecurity. He is currently transitioning out of active duty and into the reserves through the Direct Affiliation Program.

incredible and potentially detrimental effects on the world as we know it today, depending on who gets there first. Although there are numerous potential uses for quantum technology, this article will focus on: quantum computing making encryption no longer viable, communication becoming “perfectly” secure and detecting if someone tries to listen in, sensors that detect changes in the gravitational field around objects, sensors imaging objects that you cannot see, impacts on artificial intelligence, and even quantum teleportation.

... there are numerous potential uses for quantum technology ...

Quantum Physics

Before getting into the specifics of how quantum technology is going to revolutionize warfare, there are two facts about quantum physics that need to be understood: entanglement and superposition. Quantum entanglement is a phenomenon that occurs when a group of particles are connected in a way such that the quantum state of each particle of the group cannot be described independently of the state of the others, including when the particles

are separated by a large distance (theoretically by an unlimited distance). This means that if you know the state of one particle, you will know the state of all particles entangled with it, and if something were to interact with one particle, then all the entangled particles would be affected instantaneously (seemingly without the limit of the speed of light). It is important to note, and you will see in this article, that this does not allow instantaneous communication, as we cannot control how the particle entangled with the one affected will be altered (the change is instantaneous, but we do not control the resulting change). Quantum superposition is a phenomenon where these particles exist in all states at once. One way of thinking about this is that electrons can be measured by their spin, whether it is spin up or spin down. While in a superposition, each electron will be in both spin up and spin down at the same time and it is not until measured that the electron has to choose what state it will be in. For example: a coin facing up has a definite value, it is a head or a tail. Even if you do not look at the coin, you trust that it must be a head or a tail. In quantum physics, it is different; material properties of things do not exist until they are measured.² Although difficult to grasp, these basic quantum principles will help to better understand the technology that is being developed,

and how it will impact events around the world.

Quantum Decryption

When it comes to cyber security, since its inception in 1977, RSA encryption (named after the creators of the algorithm, Rivest-Shamir-Adleman) has become the most widely used asymmetric cryptography, which is based on complex math problems (such as factoring a 300-digit number) and is used for sending data from one computer to another for things such as internet banking and electronic purchases. Decrypting RSA encryption is considered impossible for a classical computer; therefore, RSA encryption is considered very secure and currently no one is really concerned about it being cracked (at least until we have a fully functioning quantum computer). A quantum computer will have the capability to decrypt RSA encryptions, potentially within minutes, because of a specific

do not have the capability to crack RSA encryption and instead have to rely on other means such as spear phishing. Now imagine if they did not need to use spear phishing and could instead gain access to whatever they wanted whenever they wanted? An enemy with this capability could have free reign over the critical infrastructure of the United States—shutting down oil pipelines needed to fuel our military vehicles, communication towers/satellites required for any command and control, dams that control the flow of water in the country, and many other critical facilities would no longer be safe. In the military, this neglect of updating to quantum encryption will cost money, resources, and most importantly, lives.

Quantum Communication

Classical communication is generally mediated by classical states of light or electricity that are incapable of assuming quantum superposition.³

There are three concepts behind quantum communication: superdense coding, the no-cloning theorem, and its eavesdropping detection capability.

algorithm, known as Shor’s Algorithm, that can only be ran by a quantum computer. Most people are unaware of what capabilities the research on quantum computing indicates, and because of this, there are those who would rather wait to see these futuristic capabilities demonstrated before they allocate any money into developing a new encryption, preferring instead to maintain their current system’s RSA encryption.

The issue with this course of action is the amount of time it would take to implement an entirely new encryption scheme into a company or business of any kind. Once quantum decryption becomes available (within a decade), all of that company’s data, which is protected by RSA encryption, would be vulnerable to quantum decryption methods. Since the outbreak of COVID-19, cyberattacks have increased by roughly 500 percent. These attacks

Using entanglement and superposition, quantum messaging can create an “unbreakable” encryption because of the fact that any external interference with the message would alter or destroy it instantaneously. There are three concepts behind quantum communication: superdense coding, the no-cloning theorem, and its eavesdropping detection capability. Superdense coding allows quantum communication to be twice as fast as anything we have today because of the fact that it uses entangled pairs; however, for the purpose of this article, we will be focusing on the no-cloning theorem and eavesdropping detection and show how this will be a major advantage in a conflict between nations. Quantum communication begins with Quantum Key Distribution: the method used to securely exchange a secret key for users to encrypt and decrypt messages. A key is generated

and then sent via a quantum channel in a superposition state between two parties. This is where the no cloning theorem and eavesdropping detection comes in: per the no cloning theorem if someone were to try to intercept the message they couldn’t clone it (as they do not know what it says before opening it), and as soon as they open it, the key will be altered and their interference will be detected by the number of anomalies found in the original key. Once a key has been deemed secure (the anomalies found are insignificant), the two users can now send information back and forth without concern of anyone reading their messages. Again, if someone were to try to intercept a message, the users would instantly know about it as the message would be altered or damaged. Secure communications can be a matter of life or death in war; unsecure communications could give crucial intelligence to an enemy, allowing the enemy to hear attack plans and then plan their own counter. During World War II, the Navy was able to intercept, decrypt, and translate Japanese radio messages so quickly that they gained crucial intelligence over Japanese plans to attack Midway and formulated a strategy to defeat the Japanese during the Battle of Midway, showcasing how important secure communications are. However, secure communications are not only a military necessity but are also very sought after in the financial sector. If you are trying to send a password to another user or if you are electronically sending large amounts of money, then you would want that communication to be perfectly secure, ensuring no malignant actors could steal from you. Quantum communication is a way to guarantee that an enemy in war will not gain knowledge you do not want them to, and criminals looking to steal money and passwords will not be able to.

Quantum Sensors

One scientific field that quantum technology will rapidly improve is metrology: the study of measurement. This technology could nullify many sensors and stealth technology used by militaries around the world. Sensors today use

things such as heat, light, sound, and motion to detect things in their range. A quantum sensor, owing to its precise measurement abilities, could measure changes in the gravitational field that objects cause as they move through the air, land, or water. For example, in 2021, an aircraft may have technology that allows it to remain hidden to radar, but no aircraft today (or in the foreseeable future) has the technology to hide from gravity.

“You can’t shield gravity.”⁴
—David Delpy (Leader of the Defense Scientific Advisory Council in Britain’s Defense Ministry)

We already see very early examples of this technology being used today in the form of Gravimeters. A Gravimeter is an instrument for measuring the difference in the force of gravity from one place to another; a Quantum Gravimeter does this by using quantum interference of matter waves to measure the local value of gravitational acceleration with very high precision. Quantum gravimeters could precisely map geological features from the gravitational force they induce, helping with getting around in places where satellite-navigation signals are unavailable, such as underwater.⁵ A look into patent applications from 1992–2015 shows that the United States and China lead the world by a huge margin with patents for quantum sensors, United States with 105 and China with 104.

Quantum Imaging

Quantum technology has already demonstrated how to take images of objects which cannot be seen. This imaging technique has also been called quantum “ghost” imaging and allows a “camera” to look in the opposite direc-

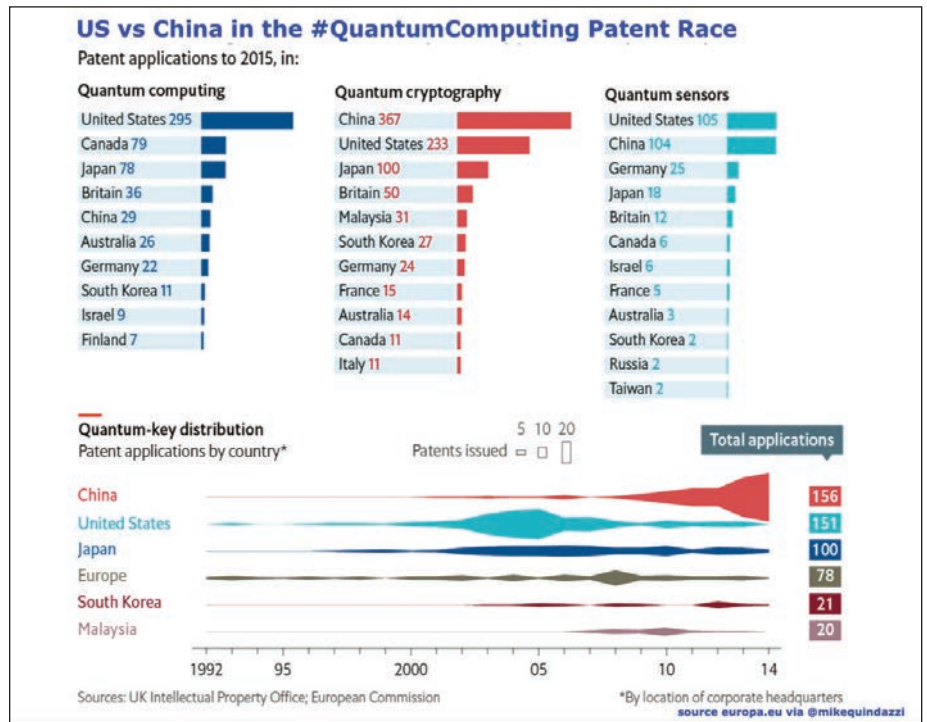


Figure 1. (Chart provided by author.)

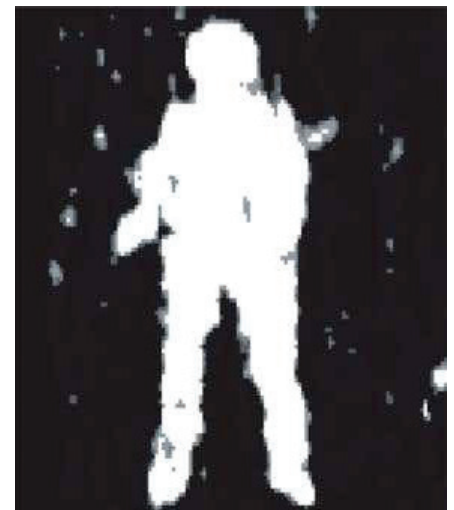
tion of the object being photographed and still get an image of the object. While this sounds like science fiction, it is actually enabled by quantum physics. Quantum imaging makes use of entanglement; when photons from a light source are split into entangled pairs, one set of photons goes to the object being imaged and the other set goes to the camera. As the set of photons pass through the object, their entangled photons that go through the camera are imaged, giving the camera an image of the object that it cannot actually see.

U.S. Army Research Laboratory physicist Ronald E. Meyers is the leader and principal investigator for the Quantum Imaging Information Sciences Directorate at U.S. Army Research Laboratory and is finding ways to allow troops to see clearly over longer distances through atmospheric turbulence and abnormalities such as smoke. This was demonstrated by the Army over a two km distance, meaning that someone on the opposite side of the city in a different building could potentially still take pictures of you without you being able to see them. This would pose many advantages in conflict, as an adversary could always be watching and

there may not be a way for those being watched to detect it.

Artificial Intelligence

Artificial intelligence (AI) is essentially computational models of human



Quantum Ghost. (Photo provided by author.)

behavior. It is unknown at this time how Quantum computing will impact the development of AI. There are three primary categories of AI based on capability:

1. *Artificial narrow intelligence.* This is the AI that we know today and is only capable of performing one primary task such as winning chess or other such games.

2. *Artificial general intelligence.* This is what you would see in science fiction movies when a robot gains consciousness, thinking and learning like a human.

3. *Artificial super intelligence.* This is what you see in science fiction movies when the AI becomes far more intelligent than any human ever could.

One of the most promising areas is in machine learning and deep learning; two facets of AI that have attracted much attention recently. Machine learning according to the Massachusetts Institute for Technology (MIT) is broadly defined as the capability of a machine to imitate intelligent human behavior and deep learning is modeled on the way the human brain works. Applications include searching through vast swathes of data to find patterns, such as in image recognition, cybersecurity and, more prosaically, recommendation engines that suggest products consumers might like.⁶ Quantum computing allows for algorithms (such as Shor’s algorithm discussed in paragraph three), which classical computers today cannot run; these new algorithms will exponentially speed up AI’s learning process and greatly enhance their machine learning and deep learning. While we do not know how advances in quantum computing and therefore the ability to process exponential amounts of data quickly will affect AI development, advances in quantum computing could be the catalyst that moves AI from its current stage of artificial narrow intelligence to eventually reaching artificial general intelligence and more.

Quantum Teleportation

It sounds like science fiction but has already been demonstrated, although the specifics are slightly different from what you may have seen in a movie. This is not taking one object and teleporting it to another location; instead, it is taking the data of one object and recreating it at another location, using raw matter at the distant location to

recreate the object. It is impossible to create a copy of a quantum state without destroying the original; it has to be destroyed in order to extract all the necessary information from it to construct the new teleported state (again, touching on the “no cloning theorem” mentioned before).⁷ In one experiment, China actually “teleported” entangled photons from a satellite down to two

... the AI that we know today and is only capable of performing one primary task ...

ground stations back in 2017. Again, the original photon was not teleported, but the data from it was, and then instantaneously recreated on the distant photon, creating a perfect copy of the original photon. This was done over distances of approximately 1,000 miles, showing that through the use of entanglement, a photon’s quantum state can be transmitted to a distant location. One example is if you wanted to teleport your phone you would first have to shred it down to atoms in order to gather the data on exactly how it is put together before it is reformed at that distant location. Once reformed, there would be no difference

between the phone you teleported and the one at the distant location—all the way down to the oil from your skin on the phone. The information seems to travel instantaneously without a speed-of-light limitation.

U.S. Competitor’s Progress

Looking at the patent applications from 1992–2015, China is primarily focusing their research on Quantum Key Distribution (quantum communications) while also greatly accelerating their patent applications in the more recent years. It is important to note that patent applications do not accurately account for all of the money or advancements that are made in a field, and it is likely that countries may not be publicly disclosing all of their quantum advancements. From 2000–2005, China issued less than 5 patent applications a year, but in 2015 they issued more than 40, increasing their interest by 8x (at least based on what they publicly show). This shows the importance China is placing on the ability to have this “perfectly secure” communication method, ensuring that their enemies cannot collect crucial intelligence on their operations. Figure 2 is a graphical representation of the estimated annual spending that countries around the world are putting into non-classified quantum-technology research based on data collected in 2015. I highlight the fact that this is only non-classified funding—as the impacts that this technology

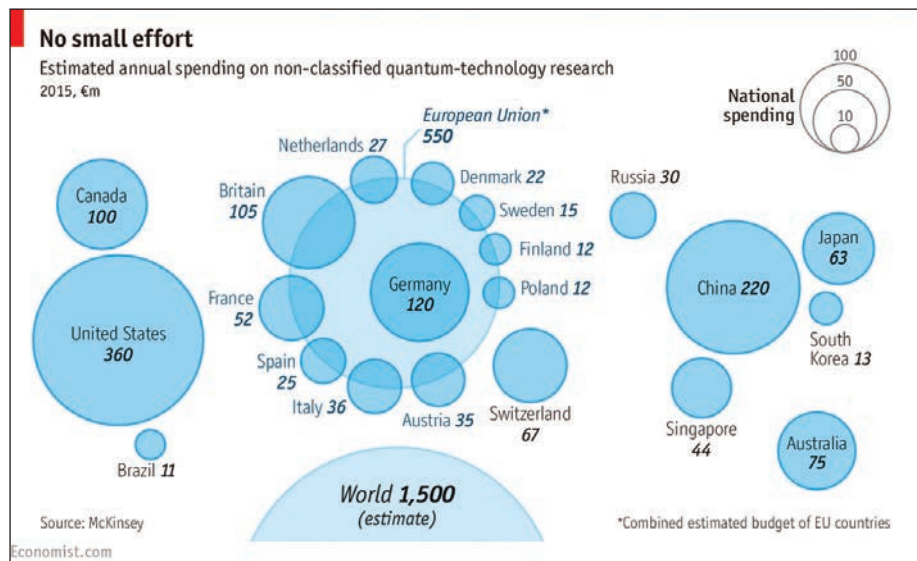


Figure 2. (Graph provided by author.)

“The main question is whether we will succeed to complete it (adapting all cryptosystems to post-quantum cryptosystems) before someone develops a quantum computer able to break the current cryptographic keys. Let me note though that your personal/private data will not be the primary target, but large public and private institutes are more concerned and actively working in developing the tools to tackle this risk.”⁸

—Peter Shor

will have on the world will likely cause some of the programs, and funding for them, to be more secretive in nature. With this in mind, it is likely that there is much more funding going into these programs than what is depicted.

Conclusion

There are still a lot of unknowns about quantum technology and what impacts it will have on the world, but just the few pieces of quantum advances talked about in this paper would be enough to change warfare, not to mention day to day life as we know it. Most people do not understand quantum technology or basic quantum principles; since it is difficult to understand, these same people tend to write it off and not take the time to learn about

it. Quantum decryption will decrypt today’s “unbreakable” encryption in minutes, quantum communication will take away commanders’ fears about the enemy listening in on their messages, quantum sensors will nullify today’s stealth capability forcing us to create new tactics, quantum imaging will allow for a more covert intelligence collection asset, quantum has the potential to boost AI to a level that has only been seen in Sci-Fi movies, and teleportation has the potential to make an instantaneous logistical pathway. Imagine fighting a war against an opponent who has the ability to get through our encryption and read our classified reporting as easily as unclassified news but that also utilizes a perfectly secure communication system of their own, which we can never see into. World leaders invest a lot of money into stealth technologies enabling secret or clandestine missions to be carried out, but if the enemy you were carrying out this mission against had quantum sensors, your stealth capabilities would be null and you would be rapidly targeted and killed (or at the very least be at the mercy of the enemy). Because of the massive impacts this technology will have on the world, we very well could see sanctions put up against the transfer of materials determined to be used in connection with an adversarial state’s quantum program, similar to the nuclear nonproliferation sanctions the United States already has. The indications of how this technology will impact the world needs to be planned for now because once even one of our adversaries claims this technology before we do, we will be at their mercy.

Notes

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Tactical Air Direction Communications


We have a problem
by Maj William DuBois

Typhoon 14 sat anxiously in the Fire Support Team's (FST's) observation position. The adversary force's air superiority was waning.¹ Last night, the battalion air officer passed that the battalion would see their first sorties of the exercise today. As the main effort, the priority of aviation fires would go to Typhoon 14's company. The information was radioed on tactical air control party/local (TACP/L), a single-channel ground and airborne radio system (SINGGARS) VHF frequency hopping net. The battalion air officer stressed the use of TACP/L to keep the tactical air direction (TAD) nets clear of ground-to-ground traffic. Living under the constant fear and pressure of enemy offensive air support the past few days made the exercise feel more real. Typhoon 14 wanted these sorties to count; he wanted to pay the adversary force back.

Typhoon 14 checked and rechecked his planned geometries. He had to dial his PRC-117G to TAD 3 and his PRC-152 to the tactical air traffic control since both nets were single-channel ultrahigh-frequency ciphertext. There were only a few more minutes until the F/A-18s were due to arrive on station. Typhoon 14 heard the Hornets check-in with the direct air support center (DASC) and read back the pilot's initial routing to Typhoon's area of operations. Typhoon 14 rolled his PRC-152 to the battalion's check-in TAD net. Typhoon 14 nodded to the FST leader as an unscripted signal confirming that aviation on station sets conditions for the company to begin its attack.


Over TACP/L, "Typhoon 14, this is Typhoon Air. I have a section of F/A-18s, callsign Blacksheep, headed your way. Checking in on TAD 3."

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Terms and Agencies



Radio Nets and Terms

- TACP/L = Tactical Air Control Party Local
- TAD = Tactical Air Direction
- TATC = Tactical Air Traffic Control
- SINGGARS = Single Channel Ground and Airborne Radio System
- FH = Frequency Hopping

Agencies

- DASC = Direct Air Support Center
- FST = Fire Support Team
- TACP = Tactical Air Control Party
- FSCC = Fire Support Coordination Center


 Understanding the involved agencies, information exchange requirements, and standard radio nets can have an outsized impact on operations in a contested spectrum environment.

Figure 1. (Figure provided by author.)

"Typhoon Air, this is Typhoon 14. Yeah I've been eavesdropping on the traffic. Ready to work them."

"Typhoon 14, this is Blacksheep 21. I've got situation update code (SUC) 3 and an updated overall situation, ready to work."

"Blacksheep 21, this is Typhoon 14. We have been expecting you, standby for close air support (CAS) 9-Line BREAK."


Typhoon 14 released the transmission switch on his dual net headset and took a deep breath. Time to take back the initiative. Typhoon 14 pressed transmit but it was not followed by the familiar

click indicating the radio was transmitting. He tried again. And then again. His radio had just worked! He furiously worked through the troubleshooting steps and noticed the signal bar on his PRC-117F was pegged.

Over TACP/L, "Typhoon Air, this is Typhoon 14. I've lost comms with Blacksheep. My radios are keyed out, but I am not hearing traffic on TAD. I cannot get a transmission in."


"Stand-by, I will give Blacksheep a radio check."

"Typhoon 14, this is Typhoon Air. I am showing the same. I think we have a



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Brevity Codes



- SUC = Situation Update Code
- BUZZER = Electronic communications jamming.
- PUSH = Switch to designated frequency; no acknowledgment required.
- CHATTERMARK = Begin using briefed communication procedures to counter communications jamming. If no modifier specified, "radio" is understood.
- BITTERSWEET = Notification of potential for blue-on blue (fratricide) or blue-on-neutral situation.
- GINGERBREAD = Voice imitative deception is suspected on this net.
- GO CLEAR = Use unencrypted voice communications.
- GO SECURE = Use encrypted voice communications.
- GO ACTIVE = Go to briefed frequency agile net.



Knowing brevity codes can improve the speed and accuracy of radio calls. Ref: MCRP 3-30B.1 May 2020

Figure 2. (Figure provided by author.)

BUZZER, PUSH CHATTERMARK Blue."

"WILCO."

Typhoon 14 rolled his PRC-117G to TAD 5, "Blacksheep 21, this is Typhoon 14."

"Typhoon 14, this is Blacksheep 21. Glad we made CHATTERMARK link up. Standing by for your 9-Line."

Typhoon 14 pressed the transmit button to reply, again nothing. How was this happening? We planned for this and used cipher text mode on all of our TAD nets!

Over TACP/L, "Typhoon Air, this is Typhoon 14, the BUZZER seems to be following me."

"Typhoon 14, this is Typhoon Air, aircrew was briefed to go deep if no comms, can't risk BITTERSWEET."

Typhoon 14 ripped off his headset in frustration. The company's attack had ended before it even began.

Tactical Training Exercise Control Group (TTECG) started work to improve air-to-ground communications security and survivability in October 2018. Beginning with Integrated Training Exercise (ITX) 3-19, TTECG required cipher text air-to-ground communications for all events. TTECG observed positive and repeatable trends towards security. The next logical step was to implement active communications to improve survivability. The tran-

sition would challenge exercise MAGTFs, so a phased shift to agile frequency hopping communications sought to lessen the impact on core training objectives. MAGTF Warfighting Exercise (MWX) 1-20 exposed the vulnerability of air-to-ground communications with the denial of CAS; the opening vignette of this article portrays a similar event in detail. More recently, during MWX 5-20, a TAD GINGERBREAD (or net intrusion) ruined a well-planned and executed air assault. The Marine Corps must immediately improve the security and survivability of air-to-ground communications.

Contested spectrum environment discussions revolved around command-and-control concerns. However, the communications challenges associated with surface- and aviation-delivered fire support are more pernicious. Of the communications supporting the various aspects of the fires' warfighting function, CAS communications are the most exposed and lucrative electronic warfare target. Incorporating electronic warfare into MWX has made one thing clear, the Marine Corps needs to immediately improve air-to-ground communications security and survivability. Making secure and survivable air-to-ground communications a training standard, getting squadron staffs and

the whole MAGTF team involved, and procuring new technologies can solve the problem.

GO CLEAR

Unencrypted or plain text radio communications have been used in training for air-to-ground communications since all but the most senior aviators entered service. As in other areas, the Marine Corps assumed spectrum supremacy and grew complacent. The preeminence of flight safety and the importance of capitalizing on every training opportunity took priority over good communications security habits. The employment of ciphertext communications, while not complicated, is not easy either. Ensuring all air players and members of the TACP have the correct fills and use the same pre-briefed procedures takes deliberate coordination.

The alternative to secure communications through technical means is to employ a verbal cipher or code. Commonly referred to as RAMROD, a verbal cipher is a way to pass sensitive information like friendly grids on unencrypted communications. Establishing a common verbal cipher or encryption fill both require equal measures of coordination. However, the verbal cipher adds yet another burden to the already task-saturated aircrew. Imagine an airborne forward air controller conducting a call for fire. The number of verbal ciphers the pilot would need to code and decode while flying would quickly compound, increasing the mental strain on the pilot and the chance for human error. In a way, the employment of encrypted communications becomes a question of efficient resource management.

If neither a technical nor a procedural method to secure communications is used, the traffic on the insecure network becomes a valuable intelligence source to the enemy. Dialing into an unsecured TAD net can provide early warning of inbound aircraft, unit locations, or even ground schemes of maneuver. Enemy forces may even decide the information gained is too valuable to disrupt or jam, leaving the air-ground team none the wiser.

As experienced in MWX 5-20, an unsecured TAD net also provides an

enemy with an avenue to influence operations. Any tunable radio with a range that covers the typical TAD spectrum band can easily participate in an unsecured TAD. At best, even an unconvincing net intruder can confuse pilots and the TACP, slowing down-tempo. At worst, an operator familiar with U.S. terminology can abort attacks, reroute aircraft, or even direct fratricide. Similar to the verbal cipher, there are procedural workarounds like challenge and passwords or authentication tables; again, this is time consuming and requires thorough pre-coordination.³ Communications security allows Marines to speak freely in high-stress and time-compressed situations with profound effects on decision making and operational tempo.

GO SECURE

When ciphertext was first directed during ITX 3-19, the received attention resulted in a painless transition. There were instances of the exercise MAGTF transmitting and receiving in the clear but expecting secure communications did not cause any safety incidents. A little-known radio feature called plain text override ensures plain text communications reach a radio set to ciphertext. This feature could allow for enemy net intrusion, so radio operators must lookout for radios receiving plain text communications while in ciphertext mode. The exact cue differs by radio system, but a visual or audio notification alerts the recipient to unexpected plain text traffic. Expecting a radio operator to identify all plain text transmissions via radio cues is unrealistic. Regular authentication checks can serve to confirm built-in radio features. If in doubt about a calling station's legitimacy, authenticate. A good practice for a station resorting to transmitting plain text on a secure net is to begin their transmission with "in the clear." The preface lets other stations know to switch their radio to plain text while also alerting them to activate authentication procedures.

MAGTFs have resorted to plain text air-to-ground communications for a variety of reasons, but supporting squadrons caused switches to unsecure communications most often. Of the five

exercise events the MAGTF resorted to plain text air-to-ground communications during ITX 3-19—aircraft caused four. There were no discernable trends between type, model, series of aircraft. Over time, success rates for ciphertext improved. Seemingly, squadrons that made secure communications a priority succeeded; those that did not had higher plain text roll rates. Informal discussions suggest the potential issue of aircraft radio material readiness is a potential issue. Making secure communications the standard for all training would confirm issues for action. Putting a spotlight on communications security is essential for change now and for maintaining good practices in the long run.

Implementing ciphertext is necessary for secure communications but insufficient for survivability. The vignette based on MWX 1-20 demonstrates how a single channel radio net is susceptible to electronic attack in both plain text and cipher text modes. Also, as learned during MWX 5-20, a non-active net is still susceptible to net intrusion because of the plain text override radio safety feature.

GO ACTIVE

The first step on the road to more survivable air-to-ground communications with current capabilities is to answer a philosophical question. Is it easier for the ACE to become proficient in employing the GCE's main frequency-agile platform SINCGARs or for the GCE to become proficient in employing the ACE's HAVEQUICK? TTECG chose HAVEQUICK for the following reasons:

1. HAVEQUICK has a faster hop rate than SINCGARs making it more survivable.
2. All Marine Corps Harris Falcon Series multiband man pack radios can perform HAVEQUICK.
3. FSTs and command posts have more personnel and radios to troubleshoot.

HAVEQUICK's faster hop rate makes it more survivable but the benefit comes with a significant drawback, strict time synchronization. *MCRP 3-20.3A, Multi-Service TTPs for Tactical Radios*, fails to give an exact time

tolerance for HAVEQUICK. However, it alludes to the need for the time of day to be very precise—down to the millisecond. Compare that to plus or minus four seconds for SINCGARs which also comes with late net entry of up to plus or minus 60 seconds.

At the time of writing this article, ITX 2-20 was the first and only exercise to direct training units to employ HAVEQUICK. The training objective was limited to fire support coordination exercises but the training audience supported the requirement and continued to attempt HAVEQUICK throughout the exercise. Unfortunately, attempts at HAVEQUICK communications during ITX 2-20 were largely unsuccessful. A single transmission and response between the regimental air officer in the fire support coordination center and a F/A-18 provided the high-water mark. In a separate event, an FST received a transmission but failed to reply. After the exercise, radio vendors made two recommendations. First, do not use Global Positioning System (GPS) time input. TTECG's first instinct to solve the problem of precise time over a distributed area of operations relied on the use of GPS-enabled radios. Rather than rely on direct GPS input to radios, designate a master time reference radio and have all other radios receive over the air-time synchronizations or "MICKEYS." Second, employ HAVEQUICK in plain text. The communications security additional overhead exacerbates the time synchronization problem. The pseudo-random hop pattern of HAVEQUICK provides a level of security in itself.

An inherent tension exists in military communications. Security on one hand conflicts with accessibility and functionality on the other. HAVEQUICK is currently the most survivable solution available for air-to-ground communications, fielded across the force, and is approved for operations. However, the complexity of ensuring time synchronization and the GCE's general unfamiliarity with the waveform provides significant barriers to network entry. A task-saturated Marine will prioritize. Even within the communications field, a Marine will likely identify an easy primary means, assume it will work,

and move on. Getting the right leaders to focus on the problem is a major part of the solution. Leveraging communications and information security experts' attention during planning will lead to more survivable air-to-ground communications enabling aviation support.

Spectrum Diverse PACE Communications Plans

Primary, Alternate, Contingency, and Emergency (PACE) communication plans consist of four well-rehearsed and understood methods for communicating to support a specific warfighting function or information exchange requirement. The most survivable PACE plans employ varied frequency bands or modes for each step. A good practice is to use the most survivable waveform as your primary option. The most survivable waveform will likely be difficult to employ. If it is not the primary option, it may not receive the necessary attention for success. The most survivable

waveform is also the hardest to attack. Placing it as the primary option forces the enemy to unmask his sophisticated and likely low-density electronic warfare assets. A boxer leads with a strong guard rather than his chin.

Given what Marine units have in their tables of equipment today, the most secure and survivable PACE plan achievable would be:

PRIMARY: HAVEQUICK Frequency Hopping (FH)/Plain Text

ALTERNATE: SINCGARS FH/Cipher Text or Plain Text

CONTINGENCY: Single Channel/Cipher Text EMERGENCY: Single Channel/Plain Text.

Current capabilities can achieve this; however, successful peer competition demands more. Reported HAVEQUICK air-to-ground successes gathered by TTECG are few enough in number and are only anecdotal. Although offered in man pack radios, HAVEQUICK's original purpose was

inter-flight communications for military aircraft. Synchronizing time for air and ground units during distributed operations may prove unrealistic. Similarly, SINCGARS was designed with ground-to-ground communications in mind despite having "airborne" in the name. Mixed success over the years proves SINCGARS is inadequate for tactical air direction. Fast-moving aircraft have an especially hard time joining this type of radio network. Besides, SINCGARS is an aged waveform with a slow hop rate not fit to spar with peer adversary jammers.

The Marine Corps needs purpose-built air-to-ground waveforms with varying degrees of complexity. Understanding the inherent tension between survivability and accessibility, the new high-performing choice requires deliberate planning. Dynamic force employment requires a less coordination-intensive secondary option. An integral part of the MAGTF combined arms punch,




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CAS may fail unless we equip aircraft and the TACP with more survivable and easier to employ communications capabilities.

Emerging Technical Solutions and the Future PACE

Link 16 is a secure and anti-jam data waveform in operation since the 1980s. Previously restricted to aircraft and ships, recent small form factor radios allow for Link 16 fielding ground units. 7th Mar did great work in bringing this technology to the Marine Corps’ attention and adapting it for use by the GCE. Fully realized, Link 16 capability extends beyond survivable air-to-ground voice communications to digital fires, precise position location identification in support of common tactical pictures, and friend or foe identification. Link 16 can even provide alternate data paths for non-fires applications. Link 16 is the more survivable and high-performing waveform CAS needs with an added host of other complementary functions.

Link 16 radios are available today and the waveform should be the primary in future air-to-ground PACE plans. Radios capable of joining the link should be fielded across the GCE and to aircraft not yet Link 16 capable. The improved survivability comes with complexities. Link 16 networks require deliberate planning and coordination between MAGTF elements and vary by specific geographic areas. Only qualified Joint Interface Control Officers at Marine Air Control Groups have the requisite knowledge. Time synchronization again factors in but to a more forgiving plus or minus six seconds degree. The network needs an unobstructed line of sight radio frequency paths on the ground or a persistent timing source from a high-loiter aviation platform to maintain functionality. These intricacies require the MAGTF to work together as a cohesive team from the beginning of planning.

Something simpler to plan and employ but still move survivable needs to serve as the air-to-ground PACE alternate. HAVEQUICK as previously explained is hard to employ and, although faster than SINGCARs FH, is relatively slow compared to new tech-

nologies. Second Generation Anti-Jam Tactical Ultrahigh Frequency Radio for NATO (SATURN), HAVEQUICK’s planned replacement is available now and in use by NATO. SATURN is far more time tolerant (5 seconds versus 50 milliseconds), compensates for propagation delay, and automatically corrects for leap seconds. SATURN is the survivable secondary option that allows for flexibility in a dynamic operating environment. It should be fielded immediately.

Alas, anything frequency-agile will be dependent on time, usually derived from GPS, which itself can be challenged in a contested communications environment. Secure single-channel options will still be needed for contingencies. Communicating in the clear should remain for emergencies only. Therefore, the recommended future PACE plan for CAS is:

PRIMARY: Link 16 Tactical Data Link

ALTERNATE: SATURN

CONTINGENCY: Single Channel / Cipher Text
EMERGENCY: Single Channel / Plain Text

Summary, Recommendations, and Conclusion

Today’s TAD communications that allow for dynamic CAS are vulnerable. Communicating in the clear without a verbal cipher unacceptably compromises operational security. Communicating on a single channel frequency invites electronic attacks or network intrusion. Communications in single-channel plain text, an unsecured and unsurvivable method, make every radio in the battlespace a collections device and jammer.

Assured communications across the battlefield in a spectrum contested environment require a mixture of technological and tactical or procedural solutions. Successful communications in a contested spectrum environment also require a cultural shift. TTECG has three recommendations to improve the security and survivability of air-to-ground communications.

1. Entrench active and secure air-to-ground communications as the standard in training. If technical means

should fail, all mission personnel (to include the TACP) instinctively roll to a common and rehearsed set of verbal ciphers and authentication tables.

2. Make it a squadron commander’s priority, track radio equipment readiness, and track violations to communications security and survivability. Get communications officers, 0681/information security technicians, collateral billet S-6s, and avionics Marines involved in solving the problem. More broadly GCE and ACE communications technology procurement need to get in step.

3. Invest in emerging communications technologies for both the ACE and GCE immediately. Specifically, fast-track Link 16 and SATURN procurement and proliferate the capabilities across the Marine Corps as soon as possible.

Professionalizing the Marines’ Joint Terminal Attack Controller as put forth in the former TTECG Air Officer Lt-Col Topper’s May 2020 *Gazette* article, “Increasing Marine Corps Lethality, 8002 as a primary MOS,” would also advance this effort by increasing air-to-ground communications training and advocacy.

Without the appropriate attention to the tactical air-to-ground communications problem, the combined arms air-ground punch that a MAGTF brings to the fight is at great risk.

TTECG is interested in all attempts to innovate in this area. Please send information to Coyote Comm (PLMS_TTECG_10_Shop@usmc.mil) for sharing throughout the Control Group.

Notes

1. See Figure 1 for agency and radio net acronym explanations, indicated by ALL CAPS.
2. See Figure 2 for Brevity Codes used in the article, indicated by ALL CAPS.
3. Headquarters Marine Corps, *MCRP 8-10B.10, Radio Operator’s Handbook*, (Washington, DC: March 2017).



Zero-Trust Networks

A more advanced cybersecurity approach

by LtCol Patrick Seipel

The *Commandant's Planning Guidance* places a priority on investments in emerging technology: “*The Marine Corps can no longer accept the inefficiencies inherent in antiquated legacy systems that put an unnecessary burden on the warfighters.*”¹

The emergence of COVID-19 caused the Marine Corps, in concert with the rest of the DOD, to rapidly transition to a model that required an unprecedented number of Marines to work from home in order to reduce the risk of viral transmission in the workplace. The shift of a large percentage of the workforce to telework placed a significant strain on information technology (IT) networks and capabilities. The Marine Corps had to rapidly adjust policies and expand access to remote-work technologies by enabling wireless on laptops, expanding capacity of the virtual private network (VPN) remote access points, and authorizing the use of remote collaboration tools such as Microsoft Teams. This identified weaknesses in our IT capabilities: our VPN access points were not provisioned to support the increased requirement and not every command has sufficient laptop computers to be able to allow Marines to take one home or back to their barracks in order to telework. Some workstations are required to remain on-site in order to continue essential operations (i.e. supply operations must continue during COVID-19); therefore, the laptops at issue and receiving points must remain in place to support those operations and are not available to support telework. In some cases, Marines were sent back to their barracks to “do the best they could” to complete work-related activities with their personal devices. While some of our IT systems and data sources such as Marine Online are

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accessible from personal devices, many systems such as email, SharePoint, and Program of Record systems cannot be accessed from outside the Marine Corps Enterprise Network (MCEN) security boundary. Outlook Web Access provides email and calendar access to those working from personal devices, but it

Zero Trust is a security model that re-imagines the way access control is implemented ...

is slow, cumbersome, particular about browser configuration, and has limited functionality. The Marine Corps can and should do better to prepare our IT infrastructure to support remote work by taking advantage of advances in technology. Thus, the Marine Corps should consider moving rapidly to a Zero Trust Architecture security model for our network infrastructure.

What is a Zero-Trust Architecture (ZTA) security model? Contrary to what might initially come to mind, Zero Trust is not a reduction in the security posture of the network nor is it a policy of locking down everything so securely that no work can take place. According to the *National Institute of Standards and Technology Special Publication 800-207*:

A ZTA deployment involves developing access policies around acceptable risk to the designated mission or business process. It is possible to deny all network access to a resource and allow access only via a connected terminal, but this is disproportionately restrictive in the majority of cases and could inhibit work from being accomplished. For a federal agency to perform its mission, there is an acceptable level of risk.²

Zero Trust is a security model that re-imagines the way access control is implemented from the ground up. It includes not just the design philosophy for the network but also requires an adjustment to the organization's mindset for IT security and access controls. In a ZTA model, trust is never implicitly granted; instead, trust is managed at a granular level and must be continuously re-evaluated.

Today, most traditional networks are built with a secure, hardened boundary or firewall where everything accessing the network from outside that boundary is considered bad and untrusted and everything accessing the network from inside the boundary is generally considered good and trusted. Our current model in the Marine Corps does implement access controls inside the network like port security, Host-Based Security System, and common access card (CAC) enabled login, but generally efforts are focused at keeping adversaries outside the network boundary. It is important to recognize that the larger, more diverse, and more connected the network is, the harder it becomes to defend; there is more opportunity for a configuration error, a software vulnerability, or a gap in security coverage that would allow penetration by a determined attacker. With the majority of security resources focused at the

boundary of the network, an attacker who is able to gain entry is potentially able to move laterally between systems and continue doing damage or exfiltrating data undeterred.

The Zero-Trust security model approaches the security paradigm from the perspective that threats exist both inside and outside the network boundary and recognizes that it is extremely difficult to maintain a completely secure network perimeter while still allowing access to cloud, commercial, and other internet-based services. Instead of trying to create an impenetrable boundary to keep adversaries out, Zero Trust assumes that the adversary is already inside the network and approaches access control with that in mind. The NSA describes it as:

Zero Trust is an “assumed breach” security model that is meant to guide cybersecurity architects, integrators, and implementers in integrating disparate but related cybersecurity capabilities into a cohesive engine for cybersecurity decision-making.³

It is important to recognize that the Zero-Trust model cannot just be applied to the networking and cybersecurity professionals who manage the infra-

structure; the model must be embraced by the entire organization including leadership, the users, and the data and resource managers. Access control in a Zero-Trust network is continuous, managed, and applied to every component of the system. The default policy is to deny all requests unless a risk-based evaluation determines access should be granted. In order to determine whether access to a resource should be granted, the Access Control Engine (ACE) evaluates many factors: the user and how they authenticated, the user’s device, the network the request is originating from, the resource requested, the user’s role, previously logged behavior of the user and their device, among others. These factors will be combined into a weighted risk score and then compared to the access control policy for the specific resource requested before the user is granted access. A simplified example of an access policy list is shown in Figure 1, and an example of a simplified trust score calculation is shown in Figure 2. This access control decision is not a one-time event; it will be re-evaluated repeatedly as long as the user is accessing the resource and will account for any changes in the factors considered.

The Marine Corps already has many of the components in place to make the transition to a Zero Trust network. The CAC and Public Key Infrastructure certificates are already used to provide identity management and support Single Sign-On (SSO) capability for many Marine Corps and DOD systems. In a ZTA, this SSO capability would be consolidated into a single SSO engine that would feed identity information to the ACE. The CAC is a well-managed identity solution, and card readers are readily available for most devices, including laptops, tablets, phones, multi-function printers, and other network devices. The SSO engine could also provide options for multi-factor authentication or the option to allow a username and password, perhaps with a lower trust score than a CAC sign-on.

Device identity management is critically important under a ZTA and provides important benefits. Google’s BeyondCorp ZTA uses a concept they call the “managed device.”⁴ This is similar in concept to MCEN workstations used by the Marine Corps. Google uses a centralized database to track each device throughout its lifecycle, from procurement to disposal, and keeps record of all

Policy	User	Device	Network	Request	Access
A	Standard	Managed	MCEN	Email	Read + Write
B	Officer/SNCO	Managed	Commercial	POR System	Read + Write
C	VIP	Unmanaged	Commercial	POR System	Read Only
D	Standard	Unmanaged	Commercial	Email	Denied

Figure 1. A simplified example of a set of access control policies that would be provided to the ACE. The ACE would evaluate the factors associated with the request and then assign the appropriate level of access based on the matching policy. (Figure provided by author.)

User	Device	Network	Request	Trust Score	Access
Standard	Managed	MCEN	Email	80	Read + Write
Officer/SNCO	Managed	Commercial	POR System	75	Read + Write
VIP	Unmanaged	Commercial	POR System	60	Read Only
Standard	Unmanaged	Commercial	Email	40	Denied

Figure 2. A simplified example uses information about the user, device, network, and type of request and calculates a trust score. The trust score can then be matched to an access control policy to determine whether access should be granted or not. The weights for each factor can be adjusted, and the cutoff for the trust score can be based on a risk analysis for the type of resource being requested. (Figure provided by author.)

changes to the device's configuration. The Marine Corps should consider a similar model. Beyond supporting a ZTA, this would also provide device configuration management and support auditability of our IT infrastructure. When a device is procured, device identity Public Key Infrastructure certificates can be created and loaded into the hardware Trusted Platform Module, or if the device does not have a Trusted Platform Module, the certificates can be loaded into a suitable software certificate store. The certificate should be uniquely linked to the device identity in the database—to identify the device as a “managed” device. This would allow a device to assert its identity to the ACE and allow the ACE to verify that assertion. The identity server can use the device identity certificate and 802.1x to dynamically assign the device to the appropriate Virtual Local Area Network based on the level of access that device should be allowed.⁵ This opens up additional options that are unavailable today. The current practice of static port mapping makes it difficult and time consuming to rearrange an office, requiring the service desk to open tickets to re-map the ports on the switch to enable movement of workstations. A Marine who takes their laptop to a different office or a conference room and plugs it into the wrong port can create a denial-of-service that takes days for the helpdesk to resolve. With a ZTA, moving workstations between locations or even taking one TAD to another base would not require helpdesk intervention because the identity server can authenticate and dynamically map the device to the correct Virtual Local Area Network.

Proper device identity management also allows for the option of “unmanaged” or “semi-managed” devices using a bring your own device model. These devices might be a personal phone, tablet, or laptop where the user installs approved management software. That software evaluates the security posture of the device to ensure the operating system is up to date, a virus scanner is running, among other functions, and can then assert to the ACE that the device meets security policy requirements.

This management software is integrated with many standard VPN client applications targeting ZTAs, including the Pulse Secure VPN client the Marine Corps already uses.⁶ These unmanaged devices would receive a lower trust score than a managed device and based on access control policies might be granted access to a more limited set of resources, but this would increase the ability to support continuity of operations, remote work, and other situations where there is limited access to MCEN workstations.

Finally, in a ZTA each resource—whether that is a database, system, or website—needs to be configured to use the ACE to manage access. In order for the ACE to grant access to a resource, the device will authenticate itself to the ACE using its device certificate, the ACE will use the SSO engine to authenticate the user's identity, and then the ACE will conduct the necessary policy checks and determine whether the risk score meets the requirements for access to the resource that has been requested. If everything checks out, then the ACE will grant the access and pass the request to the resource to be fulfilled. The ACE will then periodically re-assess to determine if access should continue to be allowed.

There are numerous benefits to implementing a ZTA. First and foremost, the DOD is migrating towards the ZTA model for all critical networks, as described in the DOD Chief Information Officer's testimony to the Senate Armed Services Committee Subcommittee on Cybersecurity.⁷ The Marine Corps would be wise to take an active role in this transition to ensure that the solutions implemented meet the needs of our service. Security of Marine Corps IT resources will be increased because ZTA forces the use of a least privilege access model which means that access enforcement will occur at the application or resource level instead of at the network level. Our network and cybersecurity professionals will have increased visibility into the access decisions being made across the enterprise. It will force our software development and procurement professionals to get a handle on what applications, resources, and devices are being procured and deployed

across the IT enterprise and consolidate this information into a useful data store. It will better posture the Marine Corps to respond to a continuity of operations situation like COVID-19 because it will enable Marines to get the job done from wherever they are without the need to rapidly deploy IT resources. Finally, it will streamline the user experience for accessing IT resources. Processes will be standardized across regions, the SSO process will be the same for all applications, and Marines will have the ability to take advantage of the mobility that comes with having laptops. Imagine the opportunities that become available if a Marine could bring their laptop to a meeting and be able to view information in realtime, or bring their laptop to another Marine's desk to collaborate on a problem in realtime. These opportunities exist in the commercial world and could be facilitated securely for the Marine Corps using a ZTA.

Notes

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EKGs Necessary to Prevent Marine Deaths

A small investment in diagnostic tools at MEPS could prevent numerous deaths of junior Marines in training and the fleet

by GySgt Andrew Guthart

The families of our Marines trust the Corps with the lives of their sons and daughters. A recent study indicates that in a population pool of athletes the size of the Marine Corps, up to eight Marines per year may die unnecessarily from sudden cardiac arrest (SCA).¹ Many of those deaths could be prevented with the addition of Electrocardiogram (EKG) testing at Military Entry Processing Stations (MEPS).

In 2013, LCpl David Finlayson died during a training run with his unit in Hawaii. His family, devastated by this unexpected loss, sought answers from the Marine Corps. LCpl Finlayson had previously been in good health and served in a physically demanding job as an infantry assaultman. The autopsy did not identify any structural abnormalities, leading the medical examiner to conclude that his death was the result of a cardiac arrhythmia of unknown origin.² According to LCpl Finlayson's mother Laurie,

That was the moment we found out they don't do EKGs as part of the pre-military medical [screening]. It was such a shock. They have two or three days of medical testing. With all the physical stresses put on these guys, how could they not do an EKG to check their hearts?

Laurie went on to start the Lion Heart Heroes Foundation to advocate for EKG screening for military members.

DOD Instruction 6130.03 lists all the medical conditions that bar entry or

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LCpl Finlayson training in Korea just six-months before his death. (Photo by Cpl Callahan.)

continued service in the military. At MEPS, a doctor will listen for heart abnormalities with a stethoscope, but this will not identify all of the heart conditions listed in the DOD instruction. An EKG can measure the electrical activity of the heart and deviations from the normal sinus rhythm can indicate arrhythmias or structural abnormalities, some of which can prove fatal over

time if left untreated.³ The latest EKG machines using International Criteria algorithms can uncover 85 percent of the heart conditions that can lead to SCA.⁴ A physician can then verify any abnormal readings and refer them for further testing.

EKG testing would not result in a significant number of health disqualifications at MEPS. Using modern technology, the false positive rate is less than three percent. In 2020, the Naval Academy, in conjunction with Naval Health Clinic Annapolis and Uniformed Health Services University, screened all incoming freshmen. Averaging 80 screenings a day, at 10 minutes per testing, a team of two corpsmen and one doctor screened 1,178 freshmen—finding 98 percent of them fit for service. Of those two percent who had an abnormal reading, additional screening returned 73 percent of them to full duty status with only seven referred for treatment.⁵ Starting in FY22, all major service academies will be conducting full cardiac screenings after a congressional advocacy campaign by the Lion Heart Heroes Foundation.



Sgt Richardson, assigned to Military Sealift Command hospital ship USNS Mercy teaches Sailors about electrocardiogram application process. (Photo by Petty Officer 3rd Class Cameron Pinske.)

Adding EKG screening to the medical process at MEPS would also be cost beneficial to the U.S. Government over time. Accounting for death gratuity payments, Service Group Life Insurance, health care, funeral costs, and survivors' pensions, the death of a Marine will cost the government an estimated \$800,000.⁶ Assuming approximately eight SCA deaths a year, this adds up to \$6.4 million per year in potentially unnecessary costs just in the Marine Corps. To install an EKG machine in all 65 MEPS nationwide would cost approximately \$130,000 based on the estimated cost of a \$2,000 high-quality EKG machine and associated equipment.⁷

Based on a 26-year study in Italy, EKG testing could offer up to an 89 percent reduction in SCA events Marine Corps-wide. The study, which took place in the Veneto region of Italy, saw

the dramatic 89 percent decrease of SCA from over four deaths per 100,000 athletes per year to less than .5 per 100,000—effectively making sudden cardiac death in sports a thing of the past. The screenings also lowered the rate of athlete deaths to less than the non-athletic civilian percentage rate.⁸

Marines who suffer an SCA in the field or during training are far more likely to die than civilian athletes who collapse, for example, in a sports stadium. While SCA is survivable with the rapid application of cardiopulmonary resuscitation (CPR) and an automatic external defibrillator (AED), time is critical with irreversible damage starting at the three-minute mark. Marines are not routinely trained in CPR and Navy corpsmen are rarely equipped with an AED. To compound this matter, Marines are often training and deployed to austere and remote environments where

definitive medical care is potentially hours away.

By adding EKG screening to the medical process at MEPS, the Marine Corps could significantly reduce SCA deaths force-wide over time. This is a truly worthy goal for our organization and a promise kept to the families of our Marines to keep their sons and daughters from unnecessary peril. By making a modest investment in EKG screening, the Marine Corps could save many young American lives.

Notes

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The Flexible Art

Jiu-Jitsu as an allegory for maneuver warfare

by 1stLt Bryson Curtin

Marines who have done even a surface-level analysis of Von Clausewitz's seminal work *On War* are familiar with his famous analogy of war as "two wrestlers locked together, each vying to exert their will over each other."¹ The famous conceptual image of the *Zweikampf*, or "Two-Struggle," has captured the minds of maneuverists everywhere as a parable for the trials of war that is easily digestible. While I will not be as arrogant as to attempt to dispute that noble Prussian's assessment, I will suggest an additional and modern analogy, one that fits our doctrine of maneuver warfare and the new era of great power rivalry that we find ourselves in. Rather than wrestling, the martial arts analogy the Marine Corps should consider is Jiu-Jitsu, as it best reflects our doctrine of maneuver warfare. Some readers will surely be practitioners of this art, whether as hobbyists or as committed fighters, and will be deeply familiar with what is described in the following paragraphs. Others will have only a loose knowledge of the "Flexible Art," as it is translated from Japanese. This is no issue, however, as my views are mostly centered around Jiu-Jitsu and maneuver warfare as concepts rather than as hard sciences. Jiu-Jitsu is a grappling-focused approach to fighting, with numerous variations and alternative methods of arriving at the end result: to impose your will over an adversary regardless of size, strength, or stamina. Much like our doctrine, it seeks to negate advantages and produce victory over an opponent quickly—with the least amount of effort expended by the victor—while forcing the opponent to expend the maximum amount of energy, allowing Marines to win in the most effective way possible.

Jiu-Jitsu is, as described by Jiu-Jitsu Coach John Danaher, "a system of fight-

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ing."² The choice of the word "system" is vital to our purposes as Marines. Rather than describe it as a "style" or "method," system implies much more substance and wholeness to the art but with a distinct pathway of action that all Jiu-Jitsu matches generally follow. These actions, however, encompass numerous possible techniques, positions, and on-the-fly actions to bring about

Much like our doctrine, it seeks to negate advantages and produce victory over an opponent quickly ...

victory, not unlike maneuver warfare. The system generally works like this: first, one must take their opponent to the ground, negating the possibility of being struck by the opponent's arms and legs. These weapons, typically the most powerful on the body, are severely impeded from striking an adversary because of the lack of space and leverage for striking that comes from ground fighting. Just as maneuver warfare seeks to bypass the surfaces of an enemy and exploit the gaps, Jiu-Jitsu seeks to avoid the most dangerous weapons in an op-

ponent's arsenal and bring the battle to favorable ground. As stated in *MCDP 1*, "Ideally, the components of their physical strength that remain are irrelevant because we have disrupted their ability to use them effectively."³ So too is the goal of taking the opponent to the ground.

The second step in this system is to control your opponent on the ground by whatever method is most efficient and effective to you. Fundamentally, Jiu-Jitsu is concerned with controlling your opponent while not being controlled yourself. The objective of this control is not simply control for the sake of control, as would be the goal in traditional wrestling, as it is inefficient. Jiu-Jitsu, like maneuver warfare, discourages action simply for the sake of action. Rather, actions should flow together with an intent to bend the opponent to your will. Offensive actions should complement defensive actions and vice versa. This efficiency-oriented approach can be compared to the principle of economy of force, or the principle of avoiding the waste of combat power by applying proportional force to an objective's size, potential threat level, and value if captured or destroyed. Further, Jiu-Jitsu seeks to control the opponent for follow on actions, seeking a superior position that provides the maximum number of opportunities to submit an opponent and bend them to the will of the other fighter, just as maneuver warfare seeks to find gaps in an enemy's system and turn them into opportunities for victory. To quote a common Jiu-Jitsu adage, "Position over submission." In other words, it is better to place oneself in a position where if one runs into a solid enemy defense, shifting to an alternate attack can be made with little slowing of the fighter's tempo rather than desperately attempt-

ing an immediate submission that puts the fighter at an unreasonable risk of losing control of the contest. As an article published in the June 2020 issue of the *Gazette* entitled “What Marines Believe about War and Warfare” phrases it, “all advantages should be ruthlessly exploited, creating a cascading chain of deteriorating conditions for the enemy.”⁴ One attack should feed into a following attack, creating a repeated series of no-win situations, just as the combined arms dilemma creates for our enemies a situation where he must submit to our will or be utterly destroyed. If one fighter escapes from the attempted arm bar from another, the attacking fighter brings them back into position for a triangle choke. If the defending fighter escapes a kimura shoulder lock by straightening their arm, the attacking fighter puts them in an elbow lock. This goes on and on, as it does in maneuver warfare, in which we seek to place the enemy in an inescapable dilemma—ultimately forcing him to either submit or be destroyed.

The remaining step is to attempt an assault on some weakness in an opponent and execute a submission. The language choice at every level in Jiu-Jitsu flows with maneuver warfare, just as the techniques and path to victory do. Notice the word is “submission,” rather than “knockout” or “pin.” A boxer could have “puncher’s luck” and score a knockout on his opponent with a wild and desperate haymaker, a wrestler can muscle his opponent to the mat with raw power and hold him long enough to score a pin, but a submission is only applied through skilled and deliberate positioning. This allows the fighter to imagine numerous pathways to victory, as the goal of a submission is, at its base level, to force your opponent to conform to your will—hence the word submission. This mindset of seeking a submission—of forcing an opponent to bend to your will—allows a fighter freedom to exploit new avenues of approach and methods of attack. Maneuver warfare itself seeks to defeat the enemy’s system by attacking a critical vulnerability and bending the adversary to our will in whatever method possible. It does not have the attritionist’s mindset of using

pure brute force to pulverize the enemy and attempt to overwhelm him with unbridled strength, and neither does Jiu-Jitsu.

I have referenced the idea of positioning in regard to both Jiu-Jitsu and maneuver warfare as fundamental to victory. The importance of this concept cannot be overstated, and its value is well understood by actors of this new age of great power conflict. Both the United States and the People’s Republic of China vie for positioning in the

Ultimately, the Flexible Art and maneuver warfare are broad reflections of each other.

Indo-Pacific region. Strategic locations like Okinawa and the South China Sea are of increasing importance not for the land itself but instead for their positioning in relation to other areas. Okinawa is 468 miles from Taiwan, arguably the single largest flashpoint between the powers today. Roughly 30 percent of the world’s crude oil trade passes through the South China Sea every year, directly near artificial islands made by the People’s Republic of China. These positions are clung to with force by both powers due to their potential as launching points for any follow-on actions. The same value is assigned to aircraft carriers and amphibious groups, as they themselves are effectively mobile strategic striking positions. In the event of a crisis, many eyes on both sides will be fixed on these positions and the potential attacks that come from them. Jiu-Jitsu fighters do the same, attempting to maneuver themselves into a favorable position not for the sake of the position itself, but its potential to inflict your will upon your opponent. Pulling guard on an opponent or wrapping your legs around his ribs while laying on your back, does not, by itself, possess value. Instead, the guard’s potential for follow-on attacks and the control over the fight it provides is the reason it is a vital part

of a fighter’s arsenal. The intention of a position far outweighs the relative value of the position itself in importance.

Ultimately, the Flexible Art and maneuver warfare are broad reflections of each other. The Marine Corps’ attempt to return itself to its roots as a small, skilled strike force brings forth the value of this comparison. The Corps will have to come to terms with disaggregating itself and fighting in numerous small unit actions while keeping to its doctrine of maneuver warfare—a difficult proposition for an organization which, for the last twenty years, has grown used to a significant top-down footprint and will require us to push a solid understanding of our doctrine down to the lowest levels. Rather than dryly reading from *MCDP 1* or from a PowerPoint, the allegory of Jiu-Jitsu should be used to teach Marines maneuver warfare. If a picture is worth a thousand words, how many words is a living allegory? Thanks to the massive success of mixed martial arts, Jiu-Jitsu has grown in the public consciousness and in the consciousness of the average Marine, who, at the very least, has seen Jiu-Jitsu conducted in passing. Many Marines prefer to learn through doing, and movement often reinforces the foundation that words lay down. Why not learn our doctrine on the mat before we have to learn it the hard way on the battlefield?

Notes

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No More Max, Max, and Relax

Improving the PFT
by Maj Terry Herzog

The Marine Corps Physical Fitness Test (PFT) has some inconsistencies when comparing the overall parity of the three events connected to it. The Marine Corps should take a deeper look into the events executed and assess if these are the best exercises to measure the fitness level we want Marines to hold themselves accountable to. I argue there is some room for improvement with the PFT and that some outside-the-box thinking could balance the playing field when it comes to PFT scores across the Marine Corps.

Over the years, the PFT has remained pretty much the same with a couple of variations that have been incorporated. Marines have to run 3 miles, or if they qualify via age requirement, they can choose to conduct a 5,000-meter row

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ups, this exercise is cut and dry: come to a dead hang, pull your chin up above the bar, drop back down to a dead hang, and without over gyrating (kipping), pull back up—then repeat. So why all the fuss? The problem is the current metrics enable a “max, max, and relax” mantra that seems embedded in the minds of thousands of Marines across the Marine Corps.

Max, max, and relax assumes a Marine will max the crunches, max the

exercise and to call them out when the exercise is not being properly executed. What usually happens is the moderator will call out a Marine for not coming all the way up or for not having their shoulder blades connect with the deck. Once the moderator makes that call, he moves on and the Marine counting their fellow Marine continues with the count regardless if the crunch is being done properly or not. There is no way someone can hide from the plank. You can either engage your core muscles and hold them in place for several minutes or you cannot and you collapse.

I am a huge advocate of making the plank the sole option for the abdominal portion requirement of the PFT. If planks were to ever replace the abdominal crunch, there would be a noticeable drop in the averages of the PFT scores across the Marine Corps. Planks would now become the great equalizer, but is that what we want? In my opinion, no. That is why, in addition to the plank as an optional exercise, there needs to be a categorical shift in the way the Marine Corps scores the run portion of the PFT.

To rid the Marine Corps of the “max, max, relax” mentality, the PFT should alter the scoring of the 3-mile run so that a minimum score on the run will not allow for an overall first-class score of 240—that is, 100 points for pull-ups, 100 points for crunches, and 40 points for a minimum run time. Marines should not accept a mediocre standard and think that by receiving a first-class rating they are somehow exceeding the standard. The way the current scoring system is set up, the run portion, by default, is not taken as seriously as the other two events. In

The three-mile run is the most dreaded event in the PFT, but it is also the most lopsided when you factor in time, age, and points.

on a rowing machine. In addition to the run/row, Marines must do a max of either dead-hang pull-ups or push-ups as well as a max set of abdominal crunches or a timed plank. The three-mile run is the most dreaded event in the PFT, but it is also the most lopsided when you factor in time, age, and points. Crunches are arguably the most controversial event because, to be quite honest, very few Marines do them by the book, thus creating an environment where everyone pretty much maxes out on crunches. Finally, regarding pull-

ups, and then relax on the run. The results of this approach end up in a Marine receiving a 1st Class PFT and only putting out in two of the three events. However, with the addition of the optional plank exercise, the max, max, and relax mindset could quickly disappear. In my professional opinion, Marines across all ranks count on receiving the max amount of points on the abdominal crunch. The tricky part with the crunch is that it is very difficult to watch numerous amounts of Marines at the same time conduct this

my experiences, the run simply becomes something a Marine endures and grinds out because he has to complete it, but there is not any incentive to put forth a max effort like there is in the other two events.

If the run portion of the PFT is scored more aggressively, it would make the run more meaningful when it comes down to a Marine receiving a first-class

tion; however, it completely neglects the older population which makes up a large majority of the leadership in the Marine Corps (18.9 percent of the Marine Corps is in the rank of E-7 to O-10).⁴ Marines can choose between dead hang pull-ups and or push-ups and abdominal crunches or a plank, but when it comes to the three-mile run, the only other option is for those Ma-

... the run simply becomes something a Marine endures and grinds out because he has to complete it, but there is not any incentive to put forth a max effort ...

score. My recommendation would be to simply make the minimum passing score for the run 2 points instead of 40. Two additional points are given for every 10-second increment ran under 27:40 until a score of 80 is reached to which scoring reverts to 1 point for every 10-second increment. This type of shift would significantly impact how Marines view the PFT. Currently, for a 17–20-year-old Marine to relax on the run and get 40 points, he has to get a minimum passing time of 27:40 (male) and 30:50 (female).¹ With my modified scoring system of the run, that same Marine would need to run a 24:30 (male) and a 27:40 (female) to get those 40 points. This slight alteration in the scoring of the run would bridge the gap on Marines relaxing on the run and create a more balanced PFT.

Another option to consider when looking into the dynamics of the run would be age. According to the 2019 Demographics Profile of the Military Community, 80 percent of the Marine Corps is under the age of 30 and 90 percent under the age of 35.² With that said, roughly 60 percent of the total active duty Marine Corps is in the rank of E-4 and below.³ A large majority of E-4's and below are likely still serving their first term in the Marine Corps. Thus, the three-mile run—which is relatively short and quick—is geared towards the younger Marine popula-

rines in their mid-40s, who can choose to perform the row instead. Why not offer Marines the option of running a double three-mile run (six miles)? For older Marines, such as myself, who have discovered this untapped repository of endurance, running six miles is doable. Below is a proposed time matrix for the six-mile run. The six-mile run would not have an age or gender definition associated with it. This run would be optional but would still produce 100 points if the maximum run time is achieved.

As Marines, most of us pride ourselves on being the best at what we do. With that said, we all know Marines who simply want to do the minimum to get by. Whether or not it is training for an actual combat mission or preparing for a PFT, Marines should never accept a comfortable mindset. We should always be trying to become better than what we were the year before. If we are expected to give it our all on the field of battle, why would we not expect the same mentality on the field of competition? Let us eradicate this lame mindset of max, max, and relax and embrace a new mantra of “max, max, and collapse,” which is aligned with the spirit of our culture and heritage as Marines where we never stop fighting until the fighting is done.

PFT 6 Mile Scoring Table		
Pace	Time	Score
7:30	45:00	100
7:45	46:30	94
8:00	48:00	88
8:15	49:30	82
8:30	51:00	76
8:45	52:30	70
9:00	54:00	64
9:15	55:30	58
9:30	57:00	52
9:45	58:30	46
10:00	60:00	40

Notes

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The Elephant in the Pool

Why swim qualification matters

by Maj Nathan J. Loomis

The Marine Corps differentiates itself through its unique naval character and traditions, including its revered position as the Nation's most proficient amphibious force-in-readiness. Amphibious capability is demonstrated in many ways, such as a Marine's ability to swim. If the Marine Corps, as a whole, has individual members who are not proficient in the water, then the amphibious capability of the Marine Corps is jeopardized. The words "Marine" and "cannot swim" do not go well together. The ability to survive in an aquatic environment is as important to the individual Marine as it is to the Marine Corps and is especially important considering the potential future conflicts that the Nation may find itself

What Is the Problem?

I was the officer in charge of the Water Survival Section at the Marine Corps Recruit Depot Parris Island (MCRD PI) from 2015 to 2016. During these seventeen months, I came to the conclusion that the Marine Corps is lacking in its collective swimming ability. I witnessed firsthand that some Marines cannot swim, some avoid the water at all costs, and some are even comfortable with falsifying records to prove a current swim qualification. The Marine Corps Instructors of Water Survival (MCIWS) at MCRD PI routinely encountered situations where seasoned Marines tried to avoid renewing their basic swim qualification. During one particular swim qualification attempt, a master gunnery sergeant stated that he had not swim qualified since 1999, a staff sergeant required 40 minutes of coaxing before having the courage to

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The Marines of the Water Survival Section at Marine Corps Recruit Depot Parris Island train thousands of recruits every year in basic swimming techniques. (Photo by SSgt Daniel Krake.)

jump off a 10-foot tower into the water, and a gunnery sergeant asked the MCIWS Marines to fill in the appropriate entry on the swim qualification form without actually performing the qualification. The attempts to avoid and the struggles to complete the annual swim qualification are symptoms of a much larger problem.

From June 2015 to January 2016, MCRD PI conducted the Water Survival Basic qualification for 10,678 recruits, of which the majority (7,307) passed on their first attempt. The remaining 32 percent, or 3,371 recruits, required

at least one additional day of instruction, with the least proficient recruits requiring the rest of the week and some even being dropped from their training company to repeat the process the following week. A majority of these less proficient recruits, commonly referred to as "Iron Ducks," had never been in a body of water larger than a bathtub. In fact, a full 69 percent had never swum in an ocean, lake, river, or pool. They arrived at recruit training and were given a week to pass the Water Survival Basic qualification, the lowest swim qualification required for all Marines. It was

a regular occurrence for the MCIWS Marines at the combat training tank at Parris Island to work with over 150 Iron Duck recruits every week.

Two primary factors made the swim qualification experience more difficult for Iron Duck recruits: a week was not enough time to teach a grown adult how to swim, and swimming in full utilities and boots is not easy even for a proficient swimmer. These two factors, together with the stress inherent to a recruit training environment, all combined to make a recruit never want to visit a pool again after graduation—let alone seek out opportunities to improve his swimming abilities. The problem then perpetuates itself, with many seasoned Marines having never completed a swim qualification since leaving a depot. The original 32 percent that could not swim in recruit training graduated and became Marines and now make up a large chunk of the force that cannot swim. This problem is created before recruit training, manifests itself during recruit training, and is then perpetuated after recruit training for the rest of a Marine's career.

Why Does This Problem Exist?

For several months in 2015, I conducted an informal quiz of each recruit that failed to qualify on the first day of swim week. I asked various questions such as: Where did you grow up? Did your parents know how to swim? Have you ever been in a body of water before now? Who raised you? Did you receive free lunch at school? Are you afraid of the water? After compiling hundreds of responses, I noticed that there were a few key demographic factors that caused a young person to arrive at recruit training not knowing how to swim. Chief among these was coming from a low-income household, with 76 percent of Iron Duck recruits having reported that their families qualified to receive free or reduced school lunches.¹ Parents are less capable to pay for swim lessons at the local community pool or making trips to locations near water when money is tight. It could then follow that if money is tight, a recruit's parents would teach them instead, but the lack of parental swimming ability accounted for a full



A MCIWS Marine instructs "Iron Duck" recruits on ways to attain the Water Survival Basic swim qualification. (Photo: DVIDSHub.)

56 percent of Iron Ducks. If the parents do not know how to swim, their children will probably never learn, nor will their children's children, with the cycle repeating through the years. Single-parent households also figured prominently, with 46 percent of Iron Duck recruits stating they grew up with only one person raising them. Low-income single parents are not as likely to teach

their children how to swim or enroll them in swim lessons. Having a fear of the water also influences whether a recruit will become an Iron Duck during recruit training, as 27 percent reported that they were either scared of the water or did not like swimming before they came to recruit training.

The problem with young Americans not being able to swim goes back



MCIWS Marines at the Marine Corps Recruit Depots learn through on-the-job training how to teach non-swimmers to swim. The same methods honed at the recruit depot training tanks could be taught to MCIWS serving in FMF units. (Photo: DVIDSHub.)

generations and can be traced to social policies prevalent from the 1940s to the 1970s. As the access to public swimming pools decreased during this time, the percentage of Americans unable to swim increased.² This is a problem bigger than the Service. It is a societal-level problem that the Marine Corps needs to learn how to solve within the structure of its programs and with its personnel.

How Can This Problem Be Fixed?

There are three potential solutions available to help mitigate this problem. First, mandate that a current Water Survival Basic qualification be a requirement for promotion to any rank. Great emphasis is already placed on having up-to-date Combat Fitness Tests, Physical Fitness Tests, and rifle/pistol range scores because these skills easily translate into deeming a Marine fit to fight. Yet, Marines are just as likely to utilize the water survival techniques taught and then sustained through the Water Survival Basic qualification, especially with the renewed emphasis on amphibious capability and operating in the Pacific. Place a “Yes” or “No” block on the Master Brief Sheet—similar to the other training blocks already located there—and factor in a Marine’s swim qualification status when conducting evaluations. Doing this would be neither unfair nor unfeasible. Water Survival Basic is the lowest swim qualification all Marines are required to possess. Every Marine, officer and enlisted, was required to possess it before graduating from recruit training or The Basic School. For those Marines who would have difficulty qualifying at the basic level, there are pools at every Marine Corps installation. In conjunction with the steps outlined below, the Marine Corps would make great strides in ensuring that every Marine was able to maintain a current Water Survival Basic qualification.

Second, incentivize the utilization of its current MCIWS. *Marine Corps Order 1500.52D* states that there should be one MCIWS for every 200 Marines. The current ratio is one for every 129 Marines.³ With such a positive instructor-to-student ratio, a unit’s MCIWS-certified Marines could be regularly



MCIWS students conduct the open-water portion of their training. MCIWS Marines know how to safely conduct water survival training, pool physical training sessions, and open water training events. (Photo: DVIDSHub.)

teaching their fellow Iron Duck Marines how to improve their swimming abilities. They are not. Most units only use their MCIWS Marines to conduct swim qualifications. Some units do not even know who their MCIWS Marines are. In addition to helping their unit’s Iron Duck Marines, MCIWS is also able to offer their commander a few other valuable skillsets. How many times has unit PT been scheduled at the pool and yet no one really got a workout? MCIWS are trained and ideally suited to develop challenging water-based physical training programs, designed to push participants to their limits in a safe and productive manner. MCIWS Marines are also trained to act as the subject-matter-expert and advisor to the commander for all high-risk waterborne events, including boat raids, helocasting, and long-distance open ocean swims. Commanders should take advantage of these unique abilities and utilize their MCIWS Marines accordingly. Reporting Seniors should consider an MCIWS certification while calculating a fitness report’s relative value and promotion boards should look for it on a Marine’s Master Brief Sheet. Taking these steps to incentivize MCIWS Marines to step outside their traditional role will encourage them to assume even greater responsibility in preparing their fellow Marines to be

better prepared to survive in an aquatic environment.

Third, the MCIWS course curriculum should include instruction on how to teach basic swimming techniques to non-swimmers or less proficient swimmers. MCIWS Marines emerge from the schoolhouse very adept at conducting swim qualifications but often find themselves lacking knowledge when faced with a Marine who cannot swim or is afraid of the water. At the recruit depots at Parris Island and San Diego, such knowledge was gained purely through on-the-job training and then passed down from one instructor to the next, having been honed after working with thousands of Iron Duck recruits. Without this sort of work experience, many MCIWS instructors are understandably hesitant to insist upon swim training for the Iron Duck Marines in their units and subsequently are not as much of an activist in support of swim training as they could and should be. Unfortunately, MCIWS Marines are viewed as expert swim instructors, when the reality is that they are not; they have exhibited the ability to perform grueling rescues, design challenging physical training sessions, analyze risky water conditions or events, and run excellent swim qualifications—but many do not have the foundational experience to instruct non-swimmers how to improve

their abilities. Because of this gap in knowledge, the very Marines who could benefit from an MCIWS Marine's expertise do not know where to turn for assistance.

Summary

By virtue of its mission and unique character, the Marine Corps needs to have people who can swim. Proficiency in the water equals survival in a combat emergency. Unit readiness decreases when a large portion of its personnel are unable to swim. Despite this problem having been created long before a recruit ever stepped into a pool at Parris Island or San Diego, it is now up to the Marine Corps to correct it. A Marine does not need to be a prior water polo team captain or a high school swim team member to be proficient in the water. In fact, most MCIWS Marines had little to no previous formal swim training before attending an MCIWS course. Learning how to swim well

can be taught, just like learning how to shoot a rifle or perform martial arts techniques.

Make having a current swim qualification a promotion requirement. Incentivize being an MCIWS by encouraging Reporting Seniors to value the certification and promotion boards to factor it into a Marine's potential for promotion. Modify the MCIWS course period of instruction to include ways to teach less proficient swimmers and then encourage the MCIWS Marines to get out there and help their fellow Marines. Implementing the steps suggested above will go a long way toward improving the amphibious capability and combat readiness of the Marine Corps.

the financial background of a recruit's family is difficult because most young people are not aware of their parent's financial status, thus asking a recruit if they received free lunch during high school became a vehicle through which to determine the income level of his or her family.

2. Jeff Wiltse, "The Deadly Legacy of Swimming Pool Discrimination," (Washington, DC: Association for Public Policy Analysis and Management Fall Research Conference, 2012).

3. Figure based off a total of 1,333 active duty Marines holding current MCIWS or MCITWS certifications and an active duty Marine Corps end strength of 172,217. Data obtained on 26 January 2022 from Command Profile, "Water Survival," Marine Corps, (n.d.), available at manpower.usmc.mil.



Notes

1. Maureen Sullivan, "Why Does It Seem That Everyone Gets a Free Lunch in School Except Your Kid," *Forbes*, (August 2015), available at <https://www.forbes.com>. Trying to determine

The Marine Corps Gazette would like to thank Dominion Energy for its support of our LtCol Earl "Pete" Ellis Annual Essay Contest.



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Honorable Mention: Maj Phillip R. Roberson, Jr. (Ret) - "The Unnecessary Command"

Honorable Mention: Col Maria McMillen - "Preparing for War"



Dominion Energy and the Marine Corps Gazette salute the winners and thank them and all the entrants in the essay contest!

Unit Sponsored Enlisted Councils

A platform for improving command climate

by Cpl Jonathan Frisbie

The enlisted Marine's collective voice is not being heard. Junior Marines and non-commissioned officers (NCO) are powerless. The CO (commanding officer) will never hear the ground-level truth of their unit.

These are just a few examples of toxic fallacies that are too often polluting the minds of the Marines in larger units. These types of thoughts create a growing cancer within the unit and hinder the commander's commitment to effective communication with their Marines. This is a mere symptom of the larger issue at hand, which is a lack of dialogue among enlisted peers, not only in the higher ranks but down to the lowest level. The Marine Corps needs a platform for Marines to come together to address their concerns and experiences with a common goal of improving the command climate. A solution is to implement Unit Sponsored Enlisted Councils (USEC).

The concept of enlisted councils is not a foreign subject to the Marine Corps. Past Marine Corps units have sponsored junior Marine councils, NCO councils, and staff noncommissioned officer (SNCO) councils but have never established all three to work together. Combining all three peer group councils will enhance the benefits that the individual councils have created. Other branches, such as the Air Force, have traditionally used this format of enlisted councils working together. However, these Air Force councils have prioritized social events and professional military education planning over facilitating communication within their command. Individual Army and Navy units have had similar

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councils; however, no Service has created a branch-wide program. As a smaller branch with densely populated units, the Marine Corps has the potential to fully utilize USEC.

In order for USEC to fully benefit a Marine Corps unit, it must be structured correctly. First, it must be structured by rank. The SNCO's council will be comprised of E6–E9; the NCO's council will be comprised of E4–E5; and the junior Marine's council will be

A solution is to implement Unit Sponsored Enlisted Councils (USEC).

comprised of E1–E3. Second, for each council, there will be a president, vice president, and secretary. The president will preside over USEC meetings, be the primary representative for their peer group to the command and make final decisions pertaining to the council. The vice president will perform the duties of the president in their absence and assist the president in collecting and disseminating information from their peers. The secretary will record, keep, and distribute summaries of council meetings to their peers and advertise scheduled meetings. Third, each council will hold

elections to ensure these positions are held by Marines that personify their peers. Elections should be held semi-annually and six-month terms will allow elected personnel to gain a better situational awareness of the unit and improve their ability to affect change. If deemed necessary, peers can remove elected Marines if they are not effectively representing the collective body.

The priority of USEC functions should focus on improving the command climate through problem-solving. Elected Marines will communicate with the Marines of their peer group through regular meetings. At the meetings, Marines will address problems, concerns, and unit successes with their peers. The elected Marines will announce any progress that was made on issues routed higher. A representative from the next level lower council should be there to speak on the matters they have gathered from their peers. The meetings should be held in the order of junior Marine council, NCO council, and SNCO council. The lesser prioritized function of USEC will be planning professional military education and social events for their respective peer groups. This will promote educational opportunities for all Marines and allow them to handpick the areas they wish to professionally develop.

The size of elements adopting these councils should be at an O5–O6 com-

mand. These councils will work better with larger commands, where there may be larger gaps in the communication of Marines. Functioning as an additional channel of communication for the CO, scheduled meetings with the CO and sergeant major may be made if prescribed by the SNCO council and approved by the CO and sergeant major. The CO and sergeant major can also pass guidance to the councils on what information they should gather and issues to discuss. Marine Corps units employing these councils should tailor them to best suit their unit.

The establishment of these councils will reinforce the command's commitment to troop welfare. Additionally, these councils will show the unit's willingness to listen and support the Marines down to the lowest level. These councils are platforms for outstanding Marines at every level to facilitate communication between the CO and their Marines. The elected

Marines are a familiar point of contact that the CO and sergeant major can approach directly. The Marines will benefit greatly, as regular meetings will create discussion among peers that focuses on achieving solutions at the lowest level. The exchange of diverse experiences at meetings will broaden perspectives and ultimately make better problem solvers. The council's secondary function of event planning will build unit cohesion. Marines can gather in professional social events to boost morale and strengthen the bonds between them and their peers. Junior enlisted Marines will gain confidence in their leadership by knowing that their voices are being heard. The opportunity to be elected and faithfully execute the position shows a Marine's initiative and leadership. USEC will provide Marines additional opportunities to stand out beyond their regular duties. Lastly, the junior Marines and NCOs elected and participating in these councils will be

empowered and learn valuable leadership traits.

The Marine Corps is ready for the opportunity to pioneer a more effective and uniform version of enlisted councils. Adoption of these councils across the FMF will be a significant action toward the betterment of troop welfare across the armed Services as a whole. Marines are known across the globe for their exceptional leadership skills and adaptability. This makes the Marine Corps uniquely qualified to be at the forefront of this dynamic leadership opportunity and pave the way for the rest of the Services.



Are Technical Experts Still Needed?

The 8999 MOS in the future fight

by Mr. Jose J. Sanchez

Over the years, gunnery sergeants, master sergeants, and master gunnery sergeants have filled the billets of first sergeants and sergeant's major with little to no impact on any unit's mission. The adage, *a master gunnery sergeant can do a sergeant major's job, but a sergeant major cannot do a master gunnery sergeant's job* has been applied in many situations and proven to be true. It makes you wonder, do we need the 8999 community as a MOS rather than a billet? Is there room for this 8999 MOS in the Marine Corps force-designed concept?

The Marine Corps enlisted ranks date back as early as 1798, when William Ward Burrows, the Lieutenant Colonel Commandant, created the enlisted ranks authorization. Following this reform, in 1799, William Farr—one of the first enlisted Marines—served as drum major. By 1800, a quartermaster sergeant was appointed. On 1 January of 1801, Archibald Summers was selected to be the first sergeant major in the Marine Corps. The Marine Corps enlisted ranks took many forms throughout history and changed their levels of responsibilities to reflect the needs of the time. An example of these changes is in 1834, legislation enacted an essential step in the evolution of the modern first sergeant when three orderly sergeants were employed as clerks at Headquarters Marine Corps. Although civilian clerks replaced these men eventually, their employment as administrative specialists set a precedent. Thus, the orderly sergeant started to be recognized as the first sergeant. Likewise, the master gunnery sergeant's rank was established in 1935 to create advancement in specialties such as ordnance and gunnery.

“We cannot afford to retain outdated policies, doctrine, organizations, or force development strategies ... we cannot ignore strong signals of change nor be complacent when it comes to designing and preparing for the future.”

**—Gen David Berger,
38th Commandant's Planning Guidance**

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This type of change continued taking place to arrange the enlisted ranks in a way that made sense depending on the Corps' needs, such as in World War I, World War II, and as recently as the beginning of the Vietnam War. The current enlisted rank structure was revised in 1958 once again to adjust the current needs and challenges the Marine Corps



Does the future Marine Corps need an 8999 MOS instead of a billet? Force-level sergeants major at the Sergeant Major of the Marine Corps Symposium, 2021. (Photo by Sgt Victoria Ross.)

encountered; at the time, the Marine Corps struggled to provide an enlisted structure that offered privileges and pay commensurate with responsibility and skill. One can argue that our current rank structure—particularly the ranks of master sergeant, first sergeant, master gunnery sergeant, and sergeant major—may have been more appropriate for the needs of that time. This short history of the enlisted ranks is a clear indication of our traditions of adapt, improvise, and overcome. A clear question needs to be asked, is the current rank structure—particularly the division of E8s and E9s—best for the future of the Marine Corps? Or do we need to go back and once again adapt, overcome, and improvise as it is our tradition?

principal enlisted assistant to the commander in all administrative, technical, and tactical requirements of the organization.

2. MGySgts and MSgts are the technical experts in their fields. The primary prerequisite is outstanding proficiency in the assigned MOS/OccFld, combined with an exceptionally high degree of leadership and supervisory ability and the ability to act independently as enlisted assistants to the commander in all administrative, technical, and tactical requirements of their occupational specialty.

There are currently three main differences between the four ranks per the enlisted promotion manual. One can argue the differences, in reality, are even fewer than what is displayed. Why does

sist the commander “in all administrative, technical, and tactical requirements of the organization.” Would a master sergeant or a master gunnery sergeant not be better prepared to assist with the technical requirements of an organization or is the role of the first sergeant or sergeant major to provide technical expertise in only administrative procedures?

By any standard, the current rank structure, particularly the division of administrative vice operational/occupational specialties between the four ranks has managed to meet the definition of success by the organization. The sacrifice, professionalism, and devotion to duty of individual Marines have enabled this antiquated system to go beyond its life cycle. However, the underutilized talent by this division of simple tasks will not be suitable for the future fight.

Gen Berger says it best on his planning guidance:

The current manpower model does not accommodate a Marine whose interests change over time, tends to average performance over time instead of weighting current performance more heavily, forces Marines to move out of skills they excel at in the name of developing them, and cuts careers off near the 20-year mark when workers have decades of productivity left in them.

Marines’ priorities, focus, knowledge, and understanding of things change with time. Under the current system, an individual Marine who chooses to be a first sergeant with twelve or thirteen years in service is stuck with that decision for seventeen to eighteen years if they advance to the rank of sergeant major. This means they could decide to stay for thirty years independently of whether they are the best individual for the job. The same example can be used for the progression from master sergeant to master gunnery sergeant. Under the current structure, the individual Marine is valued by the organization’s expectations rather than talent, knowledge, understanding, and even leadership accolades of the individual Marine. We, as an institution, are limiting the talent pool based on antiquated requirements.

“The essence of all manpower systems is to encourage those you need and want to stay, and separate who are not performing to standards. Our current system lacks the authorities and tools to accomplish that simple outcome in anything but a blunt way. Our manpower model is based primarily on time and experience, not talent or performance or potential future performance.”

***—Gen David Berger,
38th Commandant’s Planning Guidance***

The paragraph below shows the requirements needed to promote sergeants major, first sergeants, master gunnery sergeants, and master sergeants per the current *MCO P1400.32D W CH 1-2, Marine Corps Promotion Manual, Volume 2*:

3201. SERGEANT MAJOR, MASTER GUNNERY SERGEANT, FIRST SERGEANT, AND MASTER SERGEANT.

1. SgtsMaj and 1stSgts are the principal enlisted advisors to their commanders. The primary and foremost requisite is outstanding leadership, combined with an exceptionally high degree of professional competence and the ability to act independently as the

it require having completely different MOSs to perform the duties described above? Restructuring to have first sergeants and sergeants major become a billet instead of a rank would provide a more significant population to draw experiences, education, and background for command billets rather than a small group of people. The promotion manual states that a first sergeant and a sergeant major must have outstanding leadership. What defines outstanding? What level in the leadership scale/process must this potential first sergeant or sergeant major have attained? What leadership model are we using to determine an outstanding leader? Additionally, first sergeants and sergeants major are expected to as-

A first sergeant is a very talented individual, but he is only the most competitive out of those who chose to put “F” on their fitness report at the grade of E7. Many superb E7’s also decided to put “M” on their fitness report, thus creating a split in talent. Our Marine Corps first sergeants are amongst the very best. However, they are not the best E8’s in all of the force. The same is true for a sergeant major. Those who reached the prestigious rank of sergeant major, by our standards, are the best first sergeants the Corps had to offer in that particular year. Compared to the master gunnery sergeants, are those sergeants major the best E9’s in the Marine Corps? I would argue this is not true. Many master gunnery sergeants possess the same or better experiences and education than sergeants major currently in command billets. If the sergeant major and first sergeant position become a billet rather than a rank, this new approach would breed competition amongst the E8 and E9 communities. The Marine Corps would benefit from selecting individuals seeking a different experience across the force, not just from the 8999 MOS like it currently is. Many would argue that first sergeants compete against all gunnery sergeants who put “F” on their fitness report Marine Corps wide, unlike master sergeants who only compete with those in their MOS. While this is true, the point remains relevant. Many master sergeants chose not to put “F” regardless of how competitive they would have been for first sergeants.

Additionally, one can also say that many first sergeants only put “F” because they knew they weren’t competitive to be master sergeants and vice versa. Many would even say that it is not appropriate to compare a sergeant major to a master gunnery sergeant and that their responsibilities are entirely different. That is precisely the point I am trying to drive home. Per our standards, the two ranks’ expectations are not very different, and the same person can fill both billets at any given time. It begs the question: should our senior enlisted advisor to the commander not be the best individual for the job at that particular paygrade?

“It is difficult to get a man to understand something when his salary depends upon his not understanding it.”

—Upton Sinclair

“Ne Cras.” (“Not like yesterday.”) The infamous word that resonated and inspired the then Commandant of the Marine Corps, Gen Charles Krulak, to conclude that future wars would be very different from those wars fought in the past. No coming war was going to be like the war DESERT STORM. Thus, the need to change was urgent. In an interview I had with Gen Krulak when I was an instructor at Marine Corps University Staff Academy, he explained the need to change based on Varus’ AD defeat at Teutoburg Forest. He described how the less powerful enemy was able to defeat a larger force by learning their tactics. Predicting the future asymmetric warfare, Gen Krulak explained that the decision was to learn from Quintilius Varus’s mistakes and change or suffer the same fate. The “Strategic Corporal” was born out of this new change. The new corporal is required to have a better understanding of things as well as have a sound moral and mental capacity. These attributes would allow him/her to make decisions based on intent rather than directives. To fight asymmetric warfare, an NCO’s judgment in the field was the key instead of that of the colonel in headquarters like in the past wars. Indeed, his observation and drastic change in the later 1990s and early 2000s paid off in Iraq and Afghanistan, despite Gen Krulak having to fight against a Marine Corps culture that refused to change and was satisfied with the status quo.

Gen Krulak’s challenges 23 years ago are no different from the current difficulties our current Commandant faces. Resistance to change is perhaps our own worst enemy. In 2016, when then former Commandant, Gen

Neller, published his *Commandant’s Planning Guidance*, instead of Marines recognizing what was best for the Corps, everyone talked about making their particular MOS fit the guidance for fear of being left behind. Loyalty to the MOS rather than the Corps was on full display. Although we are prominent in unit cohesion and have a significant attachment to our particular field, the health and survival of the Corps should be above else. We are Marines first, before any specialty. It explains why our current Commandant is making bold decisions to implement change that benefits the Service rather than a particular MOS field.

Our current structure needs attention. Many years back we asked our junior NCOs to be more agile and diverse, yet we continue to keep our most senior enlisted personnel narrow-minded and singularly focused. Many senior enlisted may debate this new way of doing things, and there are valid points on both sides. However, one thing is a fact. Under our current structure, we are limiting potential and competition amongst all E8s and E9s. Education for senior enlisted is nearly impossible. Everyone is accounted for, thus no room for “nonessential” education. Under our current structure, we cannot afford to send our E9’s on a six- to seven-month in-depth educational classroom environment because everyone is needed. Under the new structure, the institution can realize meaningful senior enlisted education because E9’s needed to fill command or critical billets will be in abundance.

Additionally, Marines who fill the billet of first sergeants/sergeants major could go to another unit and share their experiences, thus providing a different perspective. Consequently, when their time is over, they return to their MOS/field, apply what they experience, and make their unit and MOS better. We need not limit ourselves and our potential. If anything, our junior enlisted Marines deserve to be led by the best senior enlisted!



Officer Misconduct and Its Effect on Promotions

A primer for new commanders and staff judge advocates

by Maj Adam Crane & Michael Minerva

Disclaimer: The following is an account based on our collective four and a half years' experience as the respective Section Heads for Officer Misconduct and Officer Promotions Sections, Military Personnel Law Branch (JPL), Judge Advocate Division, Headquarters Marine Corps. The views contained herein are our own and do not reflect any official position of the Department of the Navy, the Marine Corps, or JPL. Nothing in this article should be construed as forming an attorney-client relationship or as legal advice regarding any specific case.

As early as The Basic School, officers are warned about the "Black Book," and we usually come to know through anecdotal experience that officers who find themselves in trouble are cast into a purgatory of administrative processes. What most officers do not understand is what actually happens when an officer is accused of misconduct or why it may take time for resolution. It is also somewhat difficult to understand exactly how an officer's misconduct might impact his promotion. In fact, commanders, judge advocates, and officers who find themselves in legal or administrative misfortune often call their staff judge advocates or JPL with similar types of questions about the process. The following primer outlines the progression of a typical misconduct case, answers the most frequently asked questions, and will increase the collective understanding of the interrelated officer misconduct and promotions systems.

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Newly commissioned officers arriving at TBS will learn about officer misconduct and the ODN. (Photo by Max Lonzanida.)

First, to dispel myths and clarify rumors, there is no Black Book. The Officer Disciplinary Notebook (ODN) does exist, as required by Marine Corps Order, but it is hosted on a web-based application by which commanders, through their staff judge advocates,

report and track misconduct and sub-standard performance cases.¹ Officer misconduct in the Marine Corps is taken seriously by all in the chain of command, including the Commandant. There are usually between 250 and 350 officers on the ODN at any given time,

at varying points in the process, and the most common entries are, perhaps not surprisingly, captains arrested for driving under the influence of alcohol (DUI).² After investigation, many of those allegations are unsubstantiated. This article focuses on the overarching process that all allegations will go through.

The JPL of Judge Advocate Division in the office the Staff Judge Advocate (SJA) to the Commandant of the Marine Corps (CMC) is responsible for managing the ODN and supervising the entire officer misconduct process.³ JPL, in coordination with Officer Promotions Branch (MMPR-1) at Manpower and Reserve Affairs, also handles the legal aspects of the officer promotions process.

Officer Misconduct Process⁴ *ODN Entry and Personnel Hold*

When an officer commits a standard, non-aggravated offense (e.g., a low-level DUI), the case may be pending for an average of six to twelve months.⁵ Immediately after the incident occurs, the general court-martial convening authority (GCMCA)—typically the first general officer in the chain of command—will decide whether to place the officer on the ODN.⁶ The threshold is deliberately low: anything for which an officer can possibly be separated.⁷ On behalf of the GCMCA, the SJA will report the officer’s name, basic information, and a summary of the allegation. From there, the SJA will update the entry and upload endorsements or other documents as the case progresses.

When the officer is added to the ODN, a “Personnel/Administrative Hold” flag will be noted in the Marine Corps Total Force System. This means the officer generally cannot execute Permanent Change of Station orders or be discharged pursuant to an End of Active Service (EAS) date without approval from the GCMCA and coordination with JPL.⁸ As an administrative action, it is distinct from legal hold, which is used when a Marine is pending court-martial. Personnel hold does not automatically prevent an officer from being promoted, although an officer will generally not be promoted while on

the ODN. That is an entirely different, statutory process, discussed below.

Disposition Options

After investigation, the GCMCA will determine, from an array of options, how to dispose of the allegations against the officer. If the GCMCA determines the incident is not misconduct, he or she can close the case in a Report of No Misconduct.⁹ Typically when this happens, the officer is counseled with a non-punitive letter of caution for a lapse of judgment. If the GCMCA determines the officer did commit misconduct, the CG may issue a formal counseling, offer nonjudicial punishment (NJP), or refer the case to a court-martial.¹⁰ If the DUI was a minor, first-time offense with no injuries or vehicle damage, a normal resolution might be for the GCMCA

... an officer will generally not be promoted while on the ODN.

to offer NJP for violation of Articles 113 or 133, Uniform Code of Military Justice.¹¹ Once the GCMCA takes some action, he will route a report to CMC (JPL) via the Alternate Show Cause Authority (ASCA). The ASCA is usually the first lieutenant general in the chain of command and, as the name implies, is the commander who will determine whether the officer should show cause for retention at a Board Inquiry (BOI). If there is no lieutenant general in the chain (e.g., Marine Corps Logistics Command), the GCMCA will route the report to the geographically nearest ASCA.¹² The ASCA will then decide whether to direct the officer to show cause for retention at a board of inquiry (BOI). If the ASCA declines to direct a BOI, he or she will endorse the Report and forward it to the Deputy Commandant for Manpower and Reserve Affairs (DC, M&RA)—the Show Cause Authority for the Marine Corps.¹³ DC, M&RA will consider the case with advice from the SJA to CMC

and decide whether to terminate administrative proceedings (i.e., close the case and retain the officer) or to direct the officer to show cause for retention. If DC, M&RA terminates administrative proceedings, he will sign a letter to that effect, the officer will be released from personnel hold, and the adverse material will be entered into the officer’s Official Military Personnel File (OMPF) for all future boards to consider.¹⁴

Boards of Inquiry

If the ASCA decides that the officer should show cause for retention, then the ASCA will direct the GCMCA to convene a BOI. The GCMCA will formally notify the officer of the basis or bases for which he is required to show cause and will convene the BOI. An officer directed to show cause is called the respondent because they are responding. The GCMCA also appoints three members, who must be “experienced regular officers” that are senior in grade to the respondent and at least lieutenant colonels and one colonel.¹⁵

Once an officer is notified that he will have to show cause, he will contact the local branch office of the Defense Services Organization (DSO) if a defense counsel has not already contacted him. The senior defense counsel will then detail a defense counsel to the respondent who will represent the respondent at the BOI.¹⁶ The Government will also be represented by a judge advocate called the Recorder.¹⁷ The BOI may hear relevant witnesses, to include character witnesses, and consider documentary evidence. At the hearing, the BOI must decide three things by a preponderance of the evidence: whether the officer committed the act(s) alleged, if so, whether the officer should be separated from the Marine Corps, and whether the officer’s service should be characterized as either Honorable, General (Under Honorable Conditions), or Other Than Honorable.¹⁸

At the conclusion of the proceeding, the senior member of the board will summarize the board’s findings in a Report of BOI and route it to DC, M&RA via the chain of command. If the members voted (by majority vote) to retain the officer, DC, M&RA must

terminate administrative proceedings pursuant to statute.¹⁹ Just because the officer is retained, however, does not mean he will be restored to his exact position prior to the misconduct. In most cases, the adverse material leading up to the BOI will be entered into the OMPF because it is still a substantiated incident.²⁰ JPL will redact and send this adverse material, along with the officer's responses from throughout the process, to Records and Performance Branch for inclusion in the officer's OMPF. Once submitted, JPL closes the ODN case and the officer is released from personnel hold. There may be other collateral consequences that result from misconduct. For example, if the officer was relieved because of the misconduct, the commander should initiate an adverse fitness report at this time, if he or she has not done so already.²¹

If the board recommends separation however, DC, M&RA must forward the officer's case to the separation authority for naval officers, the Assistant Secretary of the Navy for Manpower and Reserve Affairs (ASN, M&RA). JPL will advise DC, M&RA and prepare an endorsement to the Report of BOI, summarizing the case and recommending a disposition and separation code. ASN, M&RA will make the final decision. If ASN, M&RA decides to separate the officer, JPL will send the adverse material to Records and Performance Branch and close the ODN case. The officer will also be released from personnel hold and Separations and Retirements Branch will establish an EAS date.

It is a simple enough process on its face, so it would be reasonable to ask why it takes so long. When one combines a command investigation, civilian proceedings, NJP, BOI, opportunities for the officer to respond, and endorsements for all correspondence through each general officer in the chain of command, the timeline can quickly become protracted.

Cases with imminent statutory separation dates or timelines receive higher priority. Because every case is different and there is no standard timeline, it is notoriously difficult for anyone to predict exactly how long any particular

case will take. Further complicating the process is how officer misconduct can affect officer promotions.

Officer Promotion Process

What if the officer was selected for promotion when the incident occurred or shortly thereafter? This naturally adds another layer to Dante's administrative labyrinth. It is important to have some awareness of the normal officer promotion process in order to understand how misconduct affects it. While others have adroitly explained the details about how a promotions board works, the following will be a helpful overview of the big picture.²² The best way to conceptualize officer promotions is to think of them as presidential appointments, with all the constitutional, statutory, and regulatory requirements that follow.

How Officers Are Made

By law, all that is required for an officer to be promoted is to be on a valid promotion authority (the monthly MARADMIN) and the projected date of promotion to occur.²³ There is no ceremony, commissioning document, or oath required. However, it goes without saying that customs matter and officers should not show up to work the day after the MARADMIN wearing new rank insignia.²⁴

For simplicity and consistency, an active duty unrestricted captain promoting to major is a good example to illustrate the process.²⁵ Pursuant to *Title 10, U.S. Code*, the Secretary of the Navy (SECNAV) will direct, and MMPR-1 will convene, a promotion selection board (PSB). This board typically convenes in Quantico during August at Harry Lee Hall—a historic building deep in the Quantico highlands with high-tech boardrooms, billeting for members, and a great hall that was once part of the Quantico Officers' Club. A MARADMIN will announce PSB convening dates and deadlines for submitting matters at least 90 days in advance of the board actually convening. After weeks of long days, usually starting around 0600 and ending well after 2000, filled with robust, protected discussions into the nuances of an offi-

cer's career, the board will make its decisions and adjourn. MMPR-1 will send the Promotion Selection List to several agencies for adverse material screening including the Inspector General of the Marine Corps, JPL, Equal Opportunity, the Naval Criminal Investigative Service, and others. JPL will screen the results against the ODN Historical List—a list of all officer misconduct cases regardless of resolution, which records information as far back as the late 1980s. Once the various agencies complete their screens, JPL will consolidate the results and prepare summaries for each officer flagged for potentially adverse material for CMC and SECNAV.²⁶

Withholds and Delays

Based on the potentially adverse information and CMC's recommendations, SECNAV decides which names he will forward to the Secretary of Defense (SECDEF) on a draft nomination scroll and which names to literally "withhold" from the nomination scroll.²⁷

After SECDEF approves the Report of Board Proceedings and the nomination scroll, and just before the promotion ALNAV is released, a "Personal For" or "P-4" message will be released, informing general officers who was selected.²⁸ A few days later, the ALNAV will be published listing everyone who was selected for promotion except those officers SECNAV withheld. The PSB's selection stands, but the officer has not been forwarded for nomination.

The list of selectees and draft nomination scroll will make its way through the Chairman of the Joint Chiefs of Staff, SECDEF, and the President of the United States. From there, the President will sign the nomination scroll and forward it to the U.S. Senate for its advice and consent in accordance with Article II, Section 2 of the U.S. Constitution. Once the Senate confirms the names on the scroll, MMPR-1 will draft and release the monthly promotion authorities (MARADMINs) in accordance with the officers' lineal standing.

Before MMPR publishes the monthly MARADMIN, JPL will conduct a second screen to ensure that officers who have committed misconduct in

the months between Senate confirmation and the release of the promotion authority do not slip through because once their name appears on a promotion authority and the date of rank occurs, there is no undoing the promotion. If JPL identifies an officer with recent or pending misconduct, it will recommend that CMC “delay” the officer’s promotion in order to provide the officer an opportunity to comment on his or her qualifications for promotion.

After the MARADMIN is published, commanders (and SJAs) should conduct a local screen for officers within their command. If a commanding officer (CO) identifies an officer on a MARADMIN that he believes is not morally, physically, or professionally qualified for promotion, the CO can delay the officer’s promotion by simply providing written notification of the action to the officer prior to the projected date of promotion. Language directing commanders to delay such officers is included in every promotion authority MARADMIN. Verbal notification will not be sufficient since the officer’s name is on a promotion authority; it must be in writing.²⁹ The CO will forward this notification through the local SJA to MMPR-1 and JPL. MMPR will make sure the officer’s promotion does not take effect in Marine Corps Total Force System.

Promotions After a Withhold or Delay

Returning to the above example—if the officer was arrested for DUI before the board, and the board selected him for promotion to major, but this adverse information was not available to the board (because it was still unadjudicated), the officer will most likely be *withheld*. If, however, the officer is on the promotion-selection ALNAV and later commits misconduct, he will be *delayed* when JPL screens the monthly MARADMIN. If the officer is withheld, his case will take much longer to process because, unless SECNAV removes the officer from the Promotion Selection List, his case will need to be routed to the Senate for confirmation. On the other hand, if the officer was delayed, SECNAV has the authority to terminate the delay. Thus, the length



Since officer promotions are approved at the Department of the Navy level, both CMC and SECNAV are involved in offer misconduct cases as well. (Photo by SSgt Ezekiel Kitandwe.)

of time a promotion case will take has little to do with the misconduct itself, but rather depends in large part on when the incident occurred in relation to the PSB.

If either of these things happen, it will not be a secret, and JPL will send the officer a letter via the chain of command (SJA channels) notifying him of the applicable action and offering an opportunity to comment. The officer will get one of these “Notice and Comment” letters if the misconduct case is still open and another one when it closes. He will only get one if the misconduct case was closed when the promotion case started (e.g., the DUI was resolved before the PSB convened, but the adverse material has not been added to the officer’s OMPF).

Matters In Support of Promotion

The officer then has ten days to submit matters in support of his promotion to the CMC, so he can make a recommendation to SECNAV. There is no required form or template for matters other than compliance with the *Navy Correspondence Manual*. The promotion package will already include the officer’s adverse material, fitness reports from the incident to present, and Master Brief Sheet, so there is no need to duplicate this information. The officer can con-

tact a defense counsel at his or her local Defense Services Organization branch for assistance and advice on preparing a response. JPL is precluded from providing this type of assistance.

CMC personally reviews each package and signs an Action Memorandum recommending the SECNAV take some action on the case.³⁰ Since both CMC and SECNAV will personally review the package, it would be wise to have someone proofread the officer’s statement if he chooses to submit one.

Possible Outcomes

Once the officer submits matters and the chain of command has endorsed them, the case is ready for processing and CMC decision. CMC basically has three options to recommend to SECNAV: that the officer’s name be “removed” from the Promotion Selection List, that the officer be promoted with his original projected date of rank, or that the officer be promoted with an adjusted date of rank. Removal is considered a failure of selection, and the Action Memo signed by CMC and SECNAV will be included in the officer’s OMPF as derogatory material.³¹ Officers are typically removed from a promotion list when their conduct does not meet the statutory exemplary conduct requirements, demonstrates that

the officer is not mentally, physically, morally or professionally qualified for promotion, or when the PSB did not see their adverse material because of the timing of the incident.³² Remember, while the officer misconduct process is about retention or separation, the officer promotion process is about qualification for the next grade. The two are not mutually exclusive.

Timeline

At any given time, there are between 250 and 300 officers whose promotions have either been withheld or delayed. They may be pending resolution of their misconduct case, or they could have just been notified that the aggravated alcohol related incident from their first year as a captain did not pass SECNAV's scrutiny even though the board may have seen it. The overall goal of this process is to ensure that only officers who meet the exemplary conduct requirements and are mentally, physically, morally and professionally qualified are promoted.³³ This means that it is very possible that although the officer's misconduct did not merit separation, his conduct fell short of exemplary, and he should not be entrusted with the responsibilities of the next grade.

Conclusion

The forgoing is why the perennial timeline question yields wildly variant answers. A fair response would be to ask what can be done to speed up the process. Because the approval authorities are very senior in the chain of command for officer misconduct and promotion cases, much of this process will likely be out of the individual officer's sphere of influence, but there are several things commanders, SJAs, and officer who find themselves on the ODN can do:

1. Respond timely. The biggest cause of delay is almost always the officer who was withheld or delayed. He should acknowledge receipt of notifications quickly, submit matters timely, and complete the medical and mental health screenings early.
2. Stay on top of the case. Especially if an officer executes a PCS move during this process, he should follow up with both his former and current

commands to make sure the matters are actually endorsed and routed. An officer can also follow up with his detailed counsel or local SJA for monthly updates. The SJA will consolidate status update requests from JPL if it is beyond their office.

From a command perspective, there are a few opportunities as well:

1. Respect the decisions of the subordinate commanders. For instance, drug abuse in a given Wing might warrant a different result than the Division. As long as the decision is not completely arbitrary or based on a protected class, justice does not require draconian parity.
2. Enforce timeliness. If the officer fails to submit matters on time, he has waived his right to do so. In coordination with your SJA, endorse it noting the officer failed to submit matters and route the case. Provide medical and mental health evaluations early. If the officer refuses to submit to an evaluation, note it in the endorsement and route it up.
3. Address legal issues. Consultation with your SJA is a key to success. Many packages arrive with glaring legal issues. JPL will often return these endorsements for a more thorough treatment of the claim, adding additional time to the overall process.
4. Follow through. If an officer submits matters then executes an EAS, he still has an active promotion or misconduct case but is now part of the Reserve Component as members of the Individual Ready Reserve or Selected Marine Corps Reserve.³⁴ Route the package anyway, noting their transition, and contact the SJA office at Marine Corps Forces Reserve. HQMC will take care of making sure the officer is on the right type of scroll, but JPL cannot act on a package if it is sitting in a battalion S-1 office.

Lastly, all officers with questions about this process should talk to their SJAs. They know this process as well and how it works across the Marine Corps. While the adjutant may be the staff officer who routes the endorsements, officer misconduct and promotions are fraught with legal issues, and the SJA must certainly be involved in

advising commanders and preparing endorsements in these types of cases.³⁵

In summary, the officer misconduct and promotions processes can be an administrative odyssey, complete with bureaucratic cyclopes and distracting sirens. But the more we collectively understand the process, the better we can take care of our Marines and the better we will be as a warfighting institution. If commanders can more effectively shepherd their high-talent officers through the process relatively unscathed and efficiently separate those with serious flaws, the Marine Corps will be better equipped to achieve its purpose as the "force of choice for the President, Secretary, and Combatant Commander."³⁶

Notes

1. Headquarters Marine Corps, *MCO 5800.16 Volume 15 (Legal Services Administration Manual [LSAM] V-15)*, (Washington, DC: August 2018).
2. Note that, while these numbers include reservists, the total represents approximately one percent of the Active Component officer population.
3. *Ibid.*
4. The following process is generally the same for substandard performance cases that do not rise to the level of misconduct. For simplicity, this primer refers exclusively to misconduct. For detailed guidance on either process, refer to the *LSAM V-15*.
5. While this may seem like an excessively long time, it a vast improvement from what processing times were just a few years ago.
6. While an O-5 or O-6 commander will rarely have GCMCA, their endorsements will be very influential in how the GCMCA may respond to the incident. Because most disposition authority for officer misconduct cases is withheld to the GCMCA and above, O-5 and O-6 commanders often have the most questions about the process.
7. *LSAM V-15*.
8. *Ibid.*
9. Closing a case with a Report of No Misconduct is then reviewed by the Alternate Show Cause Authority and JPL.

10. Manual for Courts-Martial, *Rule for Courts-Martial 306(c)*, (Washington, DC: 2019).

11. Marines have the right to consult with defense counsel prior to deciding whether to accept NJP. This consultation does not necessarily form an attorney-client relationship, however, and there is no right to representation by counsel at an NJP proceeding. If applicable, DC, M&RA will not terminate administrative proceedings until the pending civilian criminal matter is concluded.

12. *LSAM V-15*.

13. Department of the Navy, *SECNAVINST 1920.6D*, (Washington, DC: July 2019).

14. U.S. Congress, *Title 10 U.S. Code*, (Washington, DC: August 1956).

15. *SECNAVINST 1920.6D*. If the respondent is a Reserve officer, at least one member must also be a Reserve officer. Para. 3b(1).

16. Of course, officers are free to consult with a Defense Counsel before this, but this might not establish an attorney-client relationship. Officers with legal questions should contact the local DSO for information specific to that office. See, Department of the Navy, *JAGINST 5800.7F*, (Washington, DC: June 2012), *passim*, (discussing rights to counsel and attorney-client relationships within the Navy and Marine Corps); see also, Chief Defense Counsel of the United States Marine Corps, *CDC Policy Memorandum 2.3A*, (Arlington VA: March 2016).

17. This is different from enlisted administrative separations, which Marines may be more familiar with. A warrant officer or senior non-commissioned officer may serve as a recorder for an enlisted separation. Enlisted respondents will still be represented by defense counsel, however.

18. *SECNAVINST 1920.6D*. If the officer is retirement-eligible, the board will recommend the last grade at which the Respondent served satisfactorily.

19. *Title 10 U.S. Code*.

20. For example, if an officer goes to a BOI and the board finds that there is a basis for separation (i.e., that the Respondent did in fact commit the alleged misconduct), but vote to retain the officer, that would go in his OMPF. If the officer receives NJP, but a subsequent BOI does not find that a basis has been met, (sometimes confusingly and incorrectly referred to as “unsubstantiating” the allegation), the NJP will generally still go in the officer’s record

since that is a separate proceeding by a separate decision maker. This is typically a surprise to commanders and Respondents alike. The reason for this is that 10 U.S.C. § 615 requires any substantiated adverse material to be available to promotion selection boards, so the adverse material must be included. See DoDI 1320.04 for the Department of Defense definition of adverse information.

21. Note fitness reports are beyond the scope of this Primer. Refer to *MCO 1610.7A* (Performance Evaluation System), Chapters 4 and 5 for detailed information about when to complete adverse fitness reports for either performance based or conduct-related adversity. It is worth noting here though that if an officer is relieved for substandard performance, rather than misconduct, they should receive an adverse fitness report immediately, not after the GCMCA takes action or DC, M&RA closes the case.

22. See, e.g., Major Edward Mahoney, “*The Marine Officer Promotion Process: One View of How the Board Works*,” *Marine Corps Gazette*, (Quantico, VA: July 2019).

23. This also means the officer was validly nominated by the President and confirmed by the Senate or appointed by the Secretary of Defense.

24. *Title 10 U.S. Code*.

25. See generally, *SECNAVINST 1420.3*. There are different procedures and approval authorities for warrant officers, second lieutenants, and captains and above. See *SECNAVINST 1412.11*, *1412.6M*, and *1420.3* respectively. Because captains, majors, and lieutenant colonels form the bulk of promotion cases and are subject to the same process and approval authorities, they make the best example for explaining the process. See generally, *SECNAVINST 1420.3*.

26. Department of Defense, *DODI 1320.14, DOD Commissioned Officer Promotion Program Procedures*, (Washington, DC: December 2020).

27. *SECNAVINST 1420.3*.

28. See Headquarters Marine Corps, *MARADMIN 316/20, FY22 US Marine Corps Officer Promotion Selection Boards*, (Washington, DC: May 2020). Current practice is not to include the names of those officers who were withheld from the nomination scroll on the P4.

29. *Title 10 U.S. Code*. Because command delays can be very time sensitive, commanders and SJAs are encouraged to coordinate closely with JPL and MMRP-1 to effectuate the delay. A

template command delay notification is available at Figure 15-3 of LSAM and <https://www.hqmc.marines.mil>.

30. See, Department of the Navy, *SECNAV M-5216.5, DON Correspondence Manual*, (Washington, DC: May 2019).

31. *SECNAVINST 1420.3*; and Headquarters Marine Corps, *MCO P1070.12K (IRAM)*, (Washington, DC: July 2000).

32. *Title 10 U.S. Code*: “All commanding officers and others in authority in the naval service are required to show in themselves a good example of virtue, honor, patriotism, and subordination; to be vigilant in inspecting the conduct of all persons who are placed under their command; to guard against and suppress all dissolute and immoral practices, and to correct, according to the laws and regulations of the Navy, all persons who are guilty of them; and to take all necessary and proper measures, under the laws, regulations, and customs of the naval service, to promote and safeguard the morale, the physical well-being, and the general welfare of the officers and enlisted persons under their command or charge.”

33. *Ibid*. This is a new statute requiring a Special Selection Review Board (SSRB) to review adverse information that was not unavailable to the PSB. Officers will be notified in such cases and given an opportunity to respond before the SSRB convenes. While this will alter the process to some degree, SECNAV may still remove an officer even if the SSRB recommends promotion.

34. JPL and Reserve Affairs work together to screen appointments to the Reserve Active Status List, and in recent years it has become much more difficult to receive a reserve commission with adverse material. Many officers still receive appointments however because reserve commissions are processed as much as six months in advance of an officer’s EAS, leaving plenty of time for them to commit misconduct.

35. SJAs are required to process CG endorsements on promotion cases. Headquarters Marine Corps, *LSAM V-15*, (Washington, DC: August 2018).

36. Gen David H. Berger, *38th Commandant’s Planning Guidance*, (Washington, DC: July 2019).



Cyber Advisors

Leveraging cyber talent across the Corps

by CWO5 James Jabinal, USMCR

Today's Marine Corps (active and reserve component) cyber forces are generated, managed, and sustained through the primary MOS (PMOS) process, requiring formal schools, programs of instruction, and subsequent award of a PMOS. This framework, while adequate for most occupational fields, often falls short as our Service seeks to identify and retain a professionalized cyber workforce with the myriad of advanced and highly specialized skill sets required to fight and win in today's diverse operational environment. In alignment with the Commandant of the Marine Corps' *Talent Management 2030* call to action, the Marine Corps must expand its approach to recruiting, sustaining, and retaining a highly capable cyber workforce that secures/defends Marine Corps and joint assets and provides commanders with critical capabilities that allow them the flexibility to maneuver throughout the competition continuum.¹

Current State

The Marine Corps cyber force predominantly resides within Marine Corps Forces Cyberspace Command (to include their subordinate units the Marine Corps Cyberspace Warfare Group, the Marine Corps Cyberspace Operations Group, and the new network Battalions) and the Defensive Cyberspace Operations-Internal Defensive Measures (DCO-IDM) Companies within each communication battalion (to include the reserve component 6th Communication Battalion). Within the Marine Corps cyber force, there are 06XX communication structures, 17XX cyberspace structures, GS/GG civilians, and contractors. The MOSs currently in the 17XX Cyberspace Occupational Field inventory are:²

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... the Marine Corps must expand its approach to recruiting... and retaining a highly capable cyber workforce ...

- 1702 Cyberspace Warfare Officer
- 1705 Cyberspace Warfare Developer Officer

- 1710 Offensive Cyberspace Warfare Officer
- 1720 Defensive Cyberspace Warfare Officer
- 1721 Cyberspace Warfare Operator³
- 1799 Cyberspace Warfare Chief.

Training lengths vary in times but the formal MOS pipeline for the 1702 is approximately 9 months for the Cyber Operations Officer Course and 12 months for the 1721 enlisted entry-level courses.

Other "Cyber" Talent

If you want a Cyber Marine it seems straightforward, you request a 17XX Cyber Marine or team from one of the



GySgt Kiriden Benny, left, and SSGT Travis Nichols, Defensive Cyberspace Operations-Internal Defensive Measures, 6th Communication Battalion. (Photo by LCpl Hailey Music.)

Cyberspace units based on the capability required. However, the DOD Cyber Workforce lists 51 work roles (jobs), yet there is only a handful of formal MOSs.⁴ Looking at industry and academia there are individuals with bachelor degrees, masters, and PhDs in various facets and niche capabilities of cyber: penetration tester, malware reverse engineer, artificial intelligence developer, network exploiter, cloud software/security engineer, web app developer, among others. There are also a multitude of organizations that specialize in cyber security and most if not all corporations have to protect themselves from persistent cyberattacks.

With this in mind, how can the Marine Corps identify, manage, sustain, and leverage individuals with cyber skills beyond what is taught through formal MOS-producing programs of instruction? As LtCol Ben Leming stated in his article *The Reserve Cyber Force*, “cyber reservists are often professionals in the civilian IT sector (think behemoths like Google, Microsoft, or the banking industry.”⁵ The cyber reservists come from a swath of PMOSs (not 17XX). The Marine Corps must find a way to leverage these professionals.

LtGen Bellon, Commander Marine Forces Reserve, in his LinkedIn article, “State of the Marine Corps Reserve: An Irrational Call to Service,” notes, “Now more than ever, talents and insights developed in our reservists’ civilian careers will be critical accelerants that will propel our evolution as a force.”⁶ This arguably applies more to cyber than any other capability. In fact, reserve Marines from the 6th Communication Battalion DCO-IDM Companies won DC I’s Marine Corps Cyber Games Capture the Flag Tournament two years in a row. Of the ten Marines on the most recent 6th Comm Bn Team, only one had a 17XX PMOS. The rest of the team had Marines with a PMOS in infantry, communications, intelligence, and even an 8899 first sergeant!⁷ This illustrates yet another *Talent Management 2030* principle, “A Marine Corps that matches Marines’ talents to their duties will perform at a higher level in competition and combat.”⁸



Photo: Headquarters Marine Corps November 2021.

“An Irrational Call to Service”

Imagine a reserve 0402 major that received a cyber master’s degree (ex- M.S. Cybersecurity, M.E. Cybersecurity Engineering) on active duty as a captain while knowing they would be transitioning to the reserve component. This major now works as a cyber systems engineer, cyber software engineer, or cyber security incident response coordinator at Google in Mountain View, CA. Currently, the Marine Corps has no means to track or leverage that individual. If the major wanted to LATMOVE to 1702, it would involve a nine-month

about an irrational call to service! For enlisted Marines with similar civilian cyber professions, they would be required to PCS for a combined year at Pensacola, FL, and Fort Gordon. This unfortunate situation is not unique to 17XX. 28XXs face a similar challenge when required to PCS to Twentynine Palms for eight months to be awarded PMOS 2862 Ground Electronics Systems Maintenance Technician. Without PMOS 2862, the Marine will never be promoted to gunnery sergeant.

The Proposal

Today’s evolving battlespace demands and rapid advancements in cyberspace necessitate the ability to leverage the exceptional cyber talent that was not taught at formal schools. Currently, there is no way to retain a Marine with these skills unless it is in their primary MOS. The winners of the Cyber Games, described previously, illustrates the issue. Of course, there are MOS mismatches and waivers but that should not be the institutional answer when waivers are typically highly scrutinized and evaluated on an annual basis. To compound the issue, reserve Marines without a 17XX MOS are ineligible for travel reimbursement to drill.¹⁰

Today’s ... rapid advancements in cyberspace necessitate the ability to leverage the exceptional cyber talent ... not taught at formal schools.

permanent change of station (PCS) to Fort Gordon, GA. The current Basic Allowance for Housing (BAH) for O-4 with dependents in Mountain View is \$5,253, whereas in Fort Gordon it is \$1,905.⁹ The reserve major of course does not receive BAH for their home of record, but this illustrates the type of salary required to maintain residency there. This reserve major would need to take a leave of absence from Google and a salary that supports the cost of living in Mountain View to PCS for nine months while maintaining a household for a life/career/family they return to back to as a reservist. Talk

Gen Berger’s *Talent Management 2030* sums it up very nicely: “Our modern operational concepts and organizations cannot reach their full warfighting potential without a talent management system that recruits, develops, and retains the right Marines.”¹¹ Using today’s human resource development process a Free MOS (FMOS) can easily be created for exponential effects to leverage current talent, recruit, and retain the right Marines. An FMOS is a “Non-PMOS that can be filled by any Marine regardless of primary MOS. A free MOS requires skill sets unrelated to primary skills.”¹² Requirements for

a FMOS vary and can be awarded by attending formal training such as 0505 MAGTF Planner, awarded by serving in a billet for a certain amount of time such as 8055 Information Management Officer and 8016 Special Technical Operations Officer, or based on experience similar to how 0570 Foreign Security Force Advisor was previously awarded.

FMOS 1725 Cyber Advisor

Notionally, a 1725 Cyber Advisor FMOS can be awarded based on cyber skills, education, certifications, and work experience. The criteria and process can be advertised via MARADMIN and captured within the *MOS Manual*. FMOS 1725 does not require additional structure or training and would not be required to endure the DOTMLPF working group. It is simply added as an additional skills designator to an 1702/1721 on a few billets. The number of billets 1725 is applied to does not limit the quantity of Marines that can obtain the FMOS. This can be a quick win that is not relegated to the reserve component. Active component Marines potentially with cyber degrees/certifications, unique experience, those that have conducted cyber industry fellowships, or served planners at Marine Corps Forces Cyberspace Command could benefit from FMOS 1725. It can be used as a recruiting tool and the Inactive Ready Reserve Mega Musters to bring back cyber talent into the drilling reserves, and as a retention tool by adding FMOS 1725 serving at the DCO-IDM companies for drill travel reimbursement on the IDT MARADMIN.¹³ This does not negate the reserve requirement for Marines to attend formal MOS training to obtain 1702 and 1721. 1725 is not an either/or conundrum but rather it is an *and* situation. Reserve DCO-IDM Companies should continue to recruit for the entry-level pipeline, access active component to reserve component 1702/1721s, but also have the option of filling their organization with the desired mix of 1725s.

The Marine Corps Cyber Auxiliary is a similar construct to leverage civilian cyber professionals. The Marine Corps Cyber Auxiliary is “a volunteer organization aimed at increasing Ma-

rine Corps cyberspace readiness. The Cyber Auxiliary is comprised of a small cadre of highly-talented cyber experts who train, educate, advise, and mentor Marines to keep pace with constantly-evolving cyber challenges.”¹⁴ Reserve component cyber advisors could be considered a uniformed cyber auxiliary with the added benefits of security clearances and the engrained *esprit de corps* that we treasure as Marines. They can be assigned for a certain tour and can even be mobilized on orders. Without FMOS 1725, we are leaving cyber talent off of the table and not leveraging the highly skilled talent we already have access to. The different yet transferrable experience they have with countering cyber-attacks and penetration attempts on a daily basis in the financial sector with data exfiltration, hacking, and ransomware can be leveraged for the defense industrial base. They also have experience in the social media community with identifying and combatting false narratives which should also be leveraged. FMOS 1725 meets the intent of *Talent Management 2030* and perhaps makes service as a reservist a little less irrational.

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Speed as a Weapon

Maneuver warfare to defeat modern adversaries

by Capt Michael A. Hanson

According to *MCDP 1, Warfighting*, “Maneuver warfare is a warfighting philosophy that seeks to shatter the enemy’s cohesion through a variety of rapid, focused, and unexpected actions which create a turbulent and rapidly deteriorating situation with which the enemy cannot cope.”¹ Though this form of warfare has existed for ages, it was adopted as the official warfighting philosophy of the Marine Corps near the end of the Cold War in 1989 by then Commandant, Gen Alfred M. Gray. As the United States responds to the re-emergence of great power competition, the Nation must once again examine the tenets of maneuver warfare for insights on how to confront the growing threats posed by near-peer adversaries. Like the Soviet Union in 1989, the People’s Republic of China and the Russian Federation pose enormous threats to the United States today. Each of these states fields large militaries that will no doubt vastly outnumber American forces in a theater of operations. It is fitting that the philosophy of maneuver warfare can once again offer answers on how to meet these modern adversaries.

Similar to today, in the 1970s and the 1980s, the Marine Corps searched for new methods of waging war as the Nation’s focus shifted back to the colossal Soviet threat after years of fighting against guerrillas and third world soldiers in Vietnam. Gen Gray and his cohorts sought a system of waging war that a naval expeditionary force such as the Marine Corps could use successfully against the more numerous opponents the Corps was likely to face if the Cold War went hot.

In such a scenario, the Marine Corps had to be able to fight effectively while outnumbered. Years later, on a warfighting panel with the author of *MCDP 1*,

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former Major John Schmitt, Gen Gray discussed the advantages these and other leaders in the American maneuver warfare movement—such as former Air Force Colonel John Boyd, former Marine Colonel Michael Wyly, and former congressional staffer William Lind—saw in maneuver warfare philosophy:

The reason that we drove to this idea all along was very simple, in any kind of conflict during the cold war particularly, but in any kind of conflict that we could envision, we were going to be outnumbered. And if you’ve ever made an amphibious operation, you’re outnumbered there in the beginning too, and so it simply made sense to learn

how to fight a different way when you were outnumbered so that you could win. And that’s what maneuver, if you go back and study history, maneuver type thought process is the only vehicle that ever did that kind of thing.²

Gen Gray and his associates saw maneuver warfare as a force multiplier, a way to significantly expand combat power without a correlative expansion of the size of the force.

As a captain, John Schmitt detailed this view in his work, *Understanding Maneuver as the Basis for Doctrine*. Using a simple analogy, he explains the allure of maneuver warfare concepts to a force like the Marine Corps:

Maneuver stems from the wish to attack a desired objective as effectively and economically as possible. By the effective and economical use of effort, Maneuver implies the ability to succeed beyond the amount of energy expended. To borrow from science,



The tenets of maneuver warfare provide insights into competition with peer adversaries.
(Photo by Tech Sgt Joseph Harwood.)

Maneuver is a form of *leverage*, which allows us to lift a heavy object that we otherwise could not lift, allows us to get more output for the amount of energy expended—like a lever or a block and tackle that increases mechanical advantage.³

To Marines like Capt Schmitt and Gen Gray, maneuver warfare was the device that could leverage victory. The maneuver warfare machine consisted of multiple components that all conspired to create an efficient and successful output. One of the prime components of this machine was speed.

According to *MCDP 1*, “Speed is rapidity of action. It applies to both time and space. Speed over time is tempo: the consistent ability to operate quickly.

... our speed and tempo can blur the enemy's perception of not only our intentions, dispositions, and actions but his as well.

Speed over distance, or space, is the ability to move rapidly. Both forms are genuine sources of combat power. In other words, *speed is a weapon*.⁴ However, successfully harnessing speed as a weapon is not solely about being fast for the sake of being fast. Combat is not simply a race to a predesignated finish line, as *MCDP 1* explains further: “In war, it is the relative speed that matters more than absolute speed. Superior speed allows us to seize the initiative and dictate the terms of action, forcing the enemy to react to us.”⁵ Speed has to be achieved for a purpose, which is always to gain the initiative in the struggle. This is the goal that is worth expending energy in pursuit of. As *MCDP 1* continues, “Inherent in maneuver warfare is the need for speed to seize the initiative, dictate the terms of action, and keep the enemy off balance, thereby increasing his friction. We seek to establish a pace that the enemy cannot maintain so that with each action his reactions are increasingly late—until eventually he is overcome by events.”⁶ This is the ultimate purpose of moving and acting quickly.

Speed, therefore, is the fulcrum that Capt Schmitt sought to employ. Moving and acting quickly is the means to the desired end; however, speed is not the desired mechanism by itself. Tempo is the decisive object to strive for. Schmitt clarifies this point by saying, “because Maneuver only has meaning relative to the enemy, it is not absolute speed that matters, but relative speed. As John Boyd says, we can be slow as long as the enemy is slower. We can gain an advantage by improving our own speed or by decreasing the enemy’s.”⁷ We can decrease the enemy’s speed by adding to his friction, as the previous quote from *MCDP 1* suggests as well.

It is plain to see that speed and tempo are akin to the block and tackle that

Schmitt described. Getting straight to the point, he summarizes the concept succinctly by stating: “To create advantage and exploit potential advantage, we must be able to act faster than the enemy can react.”⁸ This is what he meant when he referenced Col Boyd. It follows that the ultimate goal of maneuver warfare is to out-cycle an opponent because doing so not only creates a physical advantage but a mental one. This is how a commander can impose a powerful effect on not only the mind of the opposing commander but on the minds of the troops that make up the opposing commander’s entire warfighting organization.

Conceptually speaking, Capt Schmitt explains that speed “allows us to concentrate superior force against selected enemy weakness and that it allows us to take the enemy by unexpected action.”⁹ The desire to do this is elementary in combat:

But speed is also a lever in its own right in that through superior speed we can seize and maintain the initiative, allowing us to dictate the terms of the conflict and shape events to our

advantage. Furthermore, if change is the basic vehicle of Maneuver, speed increases the impact of change and heightens the enemy’s resulting disorientation. In other words, the faster we change the situation, the greater the consequent advantage. And since war is a fluid phenomenon, if we change the situation quickly and continuously over time, our advantage compounds with each change.¹⁰

Thus, our speed and tempo can blur the enemy’s perception of not only our intentions, dispositions, and actions but his as well. By quickly and repeatedly blurring his conception of both his friendly and enemy situations, he loses sight of reality. The more blurred his mental picture is, the less effective he is as he becomes increasingly blinded by his inability to track developments fast enough to respond effectively. When this is achieved, it is incumbent on us not to lose the advantage by allowing him to regain his composure.

GEN James H. Polk, a U.S. Army horse cavalryman that became a tank officer in World War II, understood full well the concepts of speed and tempo and strongly advocated bold, aggressive, and relentless application of these maneuver warfare tenets. In his article, *The Criticality of Time in Combat*, he declared:

It is curious that so few thoughts or philosophical writings are devoted to the advantages that a step ahead in time gives to the attacker in modern ground warfare. Examples abound, and there are a number of very successful generals in modern history who instinctively understood this value of time, i.e., when your antagonist is reacting to your moves rather than you to his, when you dictate maneuvers in time and tempo and he attempts to counter them too late and to no avail, when you get this advantage then you have him by the throat.¹¹

Schmitt, an amphibious infantry officer, and Polk, a leader of armored juggernauts, come from significantly different military backgrounds representing both light and heavy formations, yet their thoughts mirror one another. GEN Polk does not stop here though. Moving beyond Schmitt’s mechanical

analogy and offering a formulaic comparison, Polk asserts, “The advantages of time and space accrue in geometric rather than arithmetic proportion, so that twice ahead in time is about four times ahead as a force multiplier. Raw numbers of units or firepower aggregates don’t count, while time and space advantages—your tempo and not his—dominate and dictate.”¹²

Just as the cavalry trained Polk saw eye to eye with a Marine infantry officer, he also agreed with the British military strategist and mechanized/armored theorist, B.H. Liddell Hart. Polk related, “Hart ... had this to say in speaking of the ratio of troops to space: ‘The offense potentially carries one unique advantage, that if the attack is made unexpectedly and with sustained speed of follow-through, it may split a slow-responding defense so deeply and disintegratingly as to paralyze resistance, annulling the comparative balance of numerical strength.’”¹³ According to Polk and Hart, speed and tempo are not only a block and tackle that boosts one’s combat power but a jackhammer that must be used to completely smash the cohesion of an enemy caught off guard.

When the enemy is out cycled and unable to effectively respond, successful exploitation then causes a zero-sum game. GEN Polk describes a situation in which one side’s combat power grows the other side’s shrinks:

The importance of advantage in the tempo of the attack is that the harder you press him, the greater becomes your advantage and, as noted earlier, it increases in geometric proportions rather than arithmetic. Numbers and firepower don’t count. A tank company behind your enemy’s brigade is equal to a battalion on his flank or two brigades attacking frontally. No modern army is trained to handle a relatively small but effective force in and among its rear area support, communication, and supply echelon. Nor are these logistic troops capable of any decent resistance. Quite the opposite, they most certainly will be thrown into a complete panic and either surrender or flee.¹⁴

What GEN Polk alludes to in this quote is when speed achieves surprise

and tempo creates shock. Shock can turn even crack organizations into a helpless rabble incapable of effective resistance: “Surprise, when achieved, should be built on, and the cumulative effect of a time advantage increases as the tempo accelerates.”¹⁵ In clear and

... employing speed as a weapon is as timeless as war itself.

tangible terms, he describes how an exploitation becomes a pursuit.

The profits inherent in operating faster than that which an opponent, even a larger one, can keep up with are apparent and ruthlessly seizing them should be the goal of every combat leader. GEN Polk concludes:

We must seek the war of maneuver, we must break through, seek the priceless time advantage so that we are ahead of our adversary, he is reacting to our last move, our time advantage overcomes his numbers, we get one step ahead, then two steps ahead, then we have him by the throat, when boldness counts, and numbers don’t matter, and we know and he knows that it is almost over. We the leaders, once this precious time advantage is gained, must drive our attacking units to the limit of endurance and beyond, because our adversaries are not only exhausted, but badly frightened and they are ours to harvest.¹⁶

This description should be used to supplement *MCDP 1*’s definition of maneuver warfare and drilled into the mind of every leader in the Marine Corps.

Time is indeed critical in combat as speed and tempo are powerful force multipliers. Properly harnessed, speed is a magnificently potent weapon that a smaller opponent can use to best a larger one. Now, as in the Cold War when many of the quotes used in this article were articulated, U.S. forces can expect to be outnumbered. Thus, speed is just as relevant a weapon in such a type of large-scale, high-intensity fight. As indicated, this is not a new concept.

Many of those who articulated the ideas quoted in this article served in both world wars, Korea, and Vietnam. However, it is a concept that has been on the shelf for nearly two decades as the U.S. military adopted different tactics to confront different foes. The return to great power competition likewise necessitates a new study of the old playbook and a fresh look at the tried-and-true tenets of maneuver warfare. To echo Gen Gray’s thoughts on the matter, the utility of employing speed as a weapon is as timeless as war itself.

Notes

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America's Sun Tzu

Col John Boyd and the development of maneuver warfare

by Capt Rykar B. Lewis

Part One

Military philosophers have existed for as long as warfare itself. Some philosophers remain relics of past days, others are as prescient today as when they first developed their theories. Col John Richard Boyd is one such philosopher who possessed the unique ability to codify theories that remain timeless. Beginning his military career as a fighter pilot, Boyd soon found himself examining generic principles of warfare beyond the cockpit. Through the study of military history, Boyd was able to identify patterns in warfare and denote principles that constantly bring victory. His analysis led him to the creation of a martial philosophy based on the psychology of mankind. This psychological-based approach—eventually called maneuver warfare—sought to understand the enemy's mind, disrupt his decision-making process, and thereby shatter his cohesion morally, mentally, and physically. Boyd essentially set forth a new manner in which to fight wars: in the mind. His teachings transformed the U.S. military and continue to impact the way warfare is viewed and the means by which wars are fought.

John Boyd began his military career in 1951, just after the start of the Korean War. His first duty station as a new second lieutenant was at Nellis Air Force Base in Arizona. At Nellis, Boyd learned to fly the F-86 Sabre. In early 1953, Boyd deployed to Korea, where he flew combat operations and developed a keen interest in air-to-air tactics. Though hardly an ace—Boyd could only accept credit for damaging a single MiG-15—the experiences he had in the skies above Korea laid the foundation for his numerous contributions to aerial combat. After the war, Boyd's foundation was built upon extensively once he transferred to the Air Force Fighter

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Weapons School, also at Nellis Air Force Base. For six years, Boyd flew the F-100 Super Sabre, studied aerial combat, and taught up-and-coming pilots the nuances of air-to-air combat. Boyd was so skilled that he never lost a perpetual \$40 bet that he could outmaneuver any pilot on his tail within 40 seconds and set up his opponent for the kill.¹ Boyd's legend was growing, as was his knowledge.

This era of Boyd's life played a crucial role in his later endeavors. His future ideas and concepts emerged from the foundation he developed as a fighter pilot. Learning to think quickly and outmaneuver his opponent had a profound impact on his understanding of

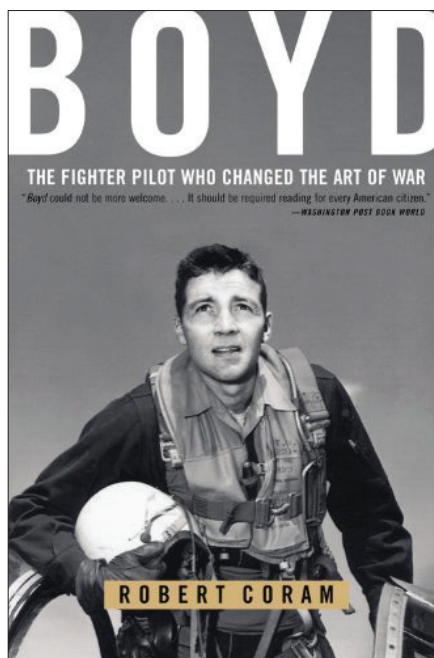
warfare in general. Even during his time at the Fighter Weapons School, Boyd was going beyond standard practices and was searching for new methods to outthink and outmaneuver his opponent in the physical and mental realms. During nights, Boyd studied calculus and developed formulas that calculated the forces of flight on a given aircraft. His self-study eventually led to his creation of the 150-page *Aerial Attack Study*, which was the first-ever manual for jet aircraft combat.² Even early in his military career, Boyd was challenging accepted practices and finding more efficient, more successful means of conducting warfare.



Despite inferiority "on paper," the North American F-86 Sabre of "Sabrejet" consistently outperformed the Soviet MiG-15 during the Korean War. Boyd would later seek to understand this phenomenon. (Photo: Joseph Eddins Airman Magazine USAF.)

Boyd was not through with shaking up the Air Force's concepts of air-to-air combat even after developing the *Aerial Attack Study*. He was aware that, at the time, the Air Force kill ratio in the skies above Vietnam was approaching one-to-one. Seemingly without justification, older-model Soviet MiG fighters were downing superior U.S. fighters in dogfights. After studying this phenomenon, Boyd concluded that speed in aerial combat was not as important as the ability to maneuver.³ This realization led him to his next great work. While at Air Force Systems Command at Eglin Air Force Base, Boyd met a civilian—Thomas Christie—who taught him to utilize a computer to conduct analysis of individual aircraft. Christie and Boyd started working on what was called the “energy-maneuverability theory” or EMT. The EMT allowed a person to analyze every American fighter against every Soviet fighter, comparing aircraft maneuverability, limitations, and G-forces.⁴ This analytical capability was extraordinarily beneficial to the Air Force. It also had a positive impact on the fighter development industry.

Boyd soon found his way into the field of designing new fighters for the Air Force. Partnering with his friend Pierre Sprey, Boyd set out to assist in developing a new fighter based upon data from the EMT. The Air Force, aware of Boyd's potential, sent him to the Pentagon to assist in designing the F-15 Eagle. Despite the potential opportunities in such an endeavor, Boyd's suggestions were continuously rejected. The final design of the F-15 was far different than what Boyd's EMT called for. The size and cost of the new fighter were unacceptable to Boyd. As a result, he began secretly creating an even more modern fighter that would boast outstanding maneuverability. The final production was the F-16 Fighting Falcon. The Air Force, however, added on to Boyd's initial design and relinquished much of the fighter's inherent maneuverability.⁵ Nevertheless, a pattern was emerging. Boyd was becoming obsessed with maneuverability. He saw the ability to maneuver as a vital part of victory in air-to-air combat.



One of the definite analyses of Boyd and his theories is *Boyd: The Fighter Pilot Who Changed the Art of War* by Robert Coram. Little, Brown and Company, 2002, ISBN-10: 0316881465.

It was only a matter of time before Boyd's theories on maneuver shifted from air-centric to include the entire realm of warfare. His observations from his time as a fighter pilot and his development of the *Aerial Attack Study* and energy-maneuverability theory established the foundation for his later philosophies on warfare. These philosophies developed after he retired in 1975. Throughout the late 1970s, Boyd worked as a contractor in the Pentagon. As his focus of study shifted from air combat tactics to a general theory of warfare, Boyd began reading and studying military history extensively.⁶ Utilizing the Pentagon library, Boyd researched the German way of war, which was to have an enduring impact on his philosophies on warfare. He studied the ideas of the great panzer commander Friedrich von Mellenthin and the *blitzkrieg* theories of Heinz Guderian and Erich von Manstein. He analyzed the inter-war military philosophers J.F.C. Fuller and B.H. Liddell Hart and read about the infiltration tactics used by the Germans in World War I under Erich Ludendorff.⁷ Boyd left virtually no stone unturned in his quest to determine the

nature of war and the keys to martial success.

Perhaps the most impactful military philosophers on Boyd's thinking were Carl von Clausewitz and Sun Tzu. The ancient writings of Sun Tzu fascinated Boyd. *The Art of War* became a touchstone for Boyd's later works. Surprise, intelligence, maneuver, and psychology all played central parts in Sun Tzu's writings and thus shaped Boyd's thoughts on warfare. Contrarily, Clausewitz was Boyd's nemesis. There was little that appealed to Boyd in *On War*. The Prussian's emphasis on attrition, decisive battles, and violent clashes of arms was in stark contrast with the writings of Sun Tzu. Boyd ultimately concluded that Sun Tzu sought to enhance friction in the enemy's ranks while Clausewitz sought simply to decrease friction in his own. In Boyd's own words, "Sun Tzu tried to drive his adversary bananas while Clausewitz tried to keep himself from being driven bananas."⁸ Sun Tzu and Clausewitz would repeatedly emerge in Boyd's later presentations on warfare.

Over the years, the essence of Boyd's military philosophy was encapsulated in his massive, 327-slide, 15-hour brief entitled the "Discourse on Winning and Losing." This extensive discourse was comprised of several smaller briefs, the most important being "Patterns of Conflict," "Organic Design for Command and Control," and "The Strategic Game of ? and ?" Unfortunately, everything that Boyd produced to outline his philosophy was contained within these briefs. Given orally, the briefs were a compilation of notes and prompts as opposed to a definitive written guide or book, which are so often associated with great military philosophers.⁹ Nevertheless, Boyd's "Discourse on Winning and Losing" was briefed widely throughout the military, ensuring that his thoughts were enshrined for generations to come.

In the abstract to the discourse, Boyd noted that the theories presented were simply general. Boyd did not teach about specific tactics or maneuvers but rather about the construct of warfare and what elements have historically led to victory. He wrote:

“Patterns of Conflict” represents a compendium of ideas and actions for winning and losing in a highly competitive world. “Organic Design for Command and Control” surfaces the implicit arrangements that permit cooperation in complex, competitive, fast-moving situations. “The Strategic Game of ? and ?” emphasizes the mental twists and turns we undertake to surface appropriate schemes or designs for realizing our aims or purposes. “Destruction and Creation” lays out in abstract but graphic fashion the ways by which we evolve mental concepts to comprehend and cope with our environment. “Revelation” makes visible the metaphorical message that flows from this “Discourse.”¹⁰

Boyd noted how the scope of the discourse changed as the individual briefs progressed. Initial concepts and theories were introduced on a broad level in “Patterns of Conflict.” By the time “Revelation” was briefed, Boyd was introducing abstract thought processes, correlations, and causations that, at first glance, appeared to have little relation to warfare.¹¹ Yet if one was able to follow Boyd throughout the multiple-hour suite of briefs, one would see that the philosophy not only dealt with warfare but also with the workings of the human mind and the relations between all beings and matter on Earth.

To begin the discourse, “Patterns of Conflict” established the basic nature of war and the key elements that produced history’s greatest military victories. The goal of the presentation was to “unveil the character of conflict, survival, and conquest ... to make manifest the nature of moral-mental-physical conflict.”¹² To do so, Boyd extensively analyzed the history of warfare. Historical examples included the ancient battles at Leuctra and Cannae, the German *blitzkrieg* versus the French Maginot Line in World War II, the F-86 dueling with the MiG-15 (a personal experience), and the Israeli Raid on Entebbe in 1976. Boyd drew out the important lessons of these examples. Patterns of victory emerged that Boyd expounded upon throughout the presentation.

Within “Patterns of Conflict,” Boyd presented what is likely his most endur-

ing idea: the observe-orient-decide-act cycle, or “OODA loop.” Essentially, Boyd taught that the loop was the means by which humans made decisions and were impacted by external forces. The cycle began with the observation phase during which a human examined the environment and circumstances. By identifying the key elements of the situation and the important factors shaping that situation, a person was establishing a foundation for a correct decision. The orientation phase led one step closer to such a decision. Heralded by Boyd as the most important step in the cycle, orientation was comprised of a conglomeration of factors that impacted a certain person’s predisposition to act in a certain way. Heritage, education, morals, past experiences, and personality all impacted the means by which a person thought and acted.¹³ As such, the orientation stage was critical to the formulation of a decision.

The next step, decision, flowed logically from the person’s orientation toward the situation. This decision was to be a sort of hypothesis regarding how to properly respond to a situation. Acting upon the decision determined whether or not the hypothesis was correct. Once an action was produced, additional external factors interacted with this action, leading one to observe, orient, decide, and act again in a repetitive cycle. These OODA loops would ideally be executed faster and faster, with the goal of outpacing the enemy’s decision-making cycles and constantly changing the environment. The result would be a disoriented adversary who would make improper decisions or no decisions at all.¹⁴ Defeating the adversary, then, involved outpacing the adversary in the decision-making cycle.

Boyd saw this pattern emerge throughout the conflicts of history. Success rested upon the ability to “diminish [the] adversary’s freedom of action while improving our freedom of action, so that our adversary cannot cope while we can cope with events/efforts as they unfold.”¹⁵ This required initiative. Boyd taught that by remaining passive, one could not shape events to his benefit. The initiative had to be gained and maintained. This was the

main goal of the OODA loop. By deciding and acting faster and with irregularity, one could maintain the initiative to exploit the adversary’s vulnerabilities and weaknesses before he could provide an adequate defense. Speed and initiative were inextricably linked. Boyd said, “In order to win, we should operate at a faster tempo or rhythm than our adversaries.”¹⁶ Being faster led to getting inside the adversary’s OODA loop and disrupting or preventing accurate decisions.

Truly, there were two sides to the OODA loop. One must execute his decision-making cycles with ever-increasing rapidity and accuracy but also seek to disrupt the adversary’s decision-making cycles. Boyd stressed the importance of “clouding” the enemy’s OODA loop to thereby impede his actions. If this were accomplished, ambiguity and confusion would occur among the enemy forces as they attempted to observe the situation accurately and orient themselves appropriately. This, of course, would take time—time during which friendly forces would execute decisions of their own. In the end, the “favorable mismatch” entailed friendly forces compressing the time required to execute accurate decisions while lengthening the time required for the enemy to do the same.¹⁷ This desired end-state rested on speed, which then led to obtaining and maintaining the initiative.

From the OODA loop, Boyd’s teachings on moral-mental-physical conflict flowed naturally. Boyd viewed warfare on this three-dimensional plane—it was a combined struggle of morals, minds, and physical elements. In his typical wordy prose, Boyd asserted that the strategic aim of his martial philosophy was to

penetrate [the] adversary’s moral-mental-physical being to dissolve his moral fiber, disorient his mental images, disrupt his operations, and overload his system, as well as subvert, or seize, those moral-mental-physical bastions, connections, or activities that he depends upon, in order to destroy internal harmony, produce paralysis, and collapse [the] adversary’s will to resist.¹⁸

Moral-mental-physical conflict was the essence of warfare to Boyd. Two or more entities struggled on this three-dimensional plane. The entity that could penetrate and destroy the other's moral, mental, or physical being would be victorious.

Within "Patterns of Conflict," Boyd also outlined his views on the categories of human conflict. His study of history taught him that the various wars fought by mankind could be categorized as attrition warfare, maneuver warfare, or moral conflict. Attrition warfare was the most basic and most widely utilized. It called for superior firepower, protection of friendly forces, and destruction of enemy forces. The "body count," seizing of terrain, and destruction of the enemy were the building blocks of success. However, maneuver warfare rested on "ambiguity, deception, novelty, mobility, and violence (or threat thereof) ... used to generate surprise and shock. Indications of success tend[ed] to be qualitative and [were] related to the widespread onset of confusion and disorder, frequent envelopments, high prisoner counts, or any other phenomena that suggest[ed] inability to adapt to change."¹⁹ The aims of maneuver warfare were to disorient the adversary, increase his friction, and destroy his cohesion. These aims were in stark contrast with those of attrition warfare.

Finally, Boyd expounded upon his ideas of moral conflict. In this model, friendly forces were free to organize, communicate, and operate within the intent of the commander. Extensive freedom was given to forces, based upon cohesion generated from moral values rather than "material superiority." Boyd saw the aim of moral conflict to be the destruction of the enemy's moral bonds that permitted him to exist and operate as a cohesive entity. To do this, friendly forces were to utilize menace, uncertainty, and mistrust. Boyd's definitions of these words were: "*Menace*: impressions of danger to one's well-being and survival; *uncertainty*: impressions, or atmosphere, generated by events that appear ambiguous, erratic, contradictory, unfamiliar, chaotic, etc.; *mistrust*: atmosphere of doubt and suspicion that loosens human bonds among members

of an organic whole or between organic wholes."²⁰ Boyd stressed the use of menace, uncertainty, and mistrust in a variety of ways to collapse the enemy system.

Within the three categories of warfare, Boyd advocated maneuver warfare and moral conflict. To him, attrition warfare was characterized by Clausewitzian battles that involved excessive bloodshed to destroy enemy forces. Boyd rejected the teachings of Clausewitz in favor of those of Sun Tzu. Collapsing the enemy system through maneuver warfare and moral conflict was in line with Sun Tzu's ideas. Chaos, ambiguity, confusion, speed, and initiative were oft-repeated words in "Patterns of Conflict." Despite his distaste for the renowned Prussian military philosopher, Boyd admired more recent examples of German warfare. The *blitzkrieg* of the Second World War or the 1918 offensives of Ludendorff were cited to support his idea of the superiority of maneuver warfare and moral conflict over attrition warfare. Uniquely German concepts such as center of gravity, main effort, *blitzkrieg*, infiltration and penetration, and mission tactics became common concepts taught by Boyd in "Patterns of Conflict."²¹ In a way, Boyd was less creating a new philosophy for warfare than he was identifying the successful aspects of numerous other philosophies and combining them into a single, unifying theory.

As Boyd concluded "Patterns of Conflict," he summarized the basis of his philosophy into tactics, grand tactics, strategy, and the strategic aim. He asserted that the goal of tactics was to complete OODA loops faster and more inconspicuously in order to gain and maintain the initiative. This enabled one to strike at enemy vulnerabilities before they could be bolstered by other resources. Grand tactics involved operating within the enemy's OODA loops and disrupting the enemy's observation of the situation and accurate orientation toward problems. Menace, uncertainty, and mistrust were keys to folding the enemy back inside himself. The end-state of grand tactics was to

maneuver [the] adversary beyond his moral-mental-physical capacity to

adapt or endure so that he can neither divine our intentions nor focus his efforts to cope with the unfolding strategic design or related decisive strokes as they penetrate, splinter, isolate or envelop, and overwhelm him.²²

In no way was an emphasis placed on the attrition warfare of Clausewitz. Rather, Boyd stressed the importance of maneuvering and fighting in the moral-mental-physical domain.

Moving beyond the tactical level, Boyd outlined the strategy and aim of his philosophy:

Penetrate [the] adversary's moral-mental-physical being to dissolve his moral fiber, disorient his mental images, disrupt his operations, and overload his system, as well as subvert, shatter, or seize those moral-mental-physical bastions, connections, or activities that he depends upon, in order to destroy internal harmony, produce paralysis, and collapse [the] adversary's will to resist.²³

The favorable mismatch involved degrading the enemy's ability to adequately and cohesively respond to events while improving the ability of friendly forces to do so. Boyd understood the infinite possibilities by which a force could achieve this strategic aim. As such, Boyd did not create an extensive tactical manual in "Patterns of Conflict." Rather, his presentation identified the nature of war and the principles for attaining victory.

Part Two

After concluding his analysis of the patterns apparent in the history of warfare in "Patterns of Conflict," Boyd then presented "Organic Design for Command and Control." In this presentation, Boyd outlined the role of command and control (C2) and how, when properly utilized, it could lead to victory. Essentially, Boyd saw the purpose of C2 to be fourfold: to provide insight and vision, focus and direction, adaptability, and security to maintain unpredictability. First, insight and vision were required to discern the enemy's plans as well as to develop friendly-force plans. Without accurate insight and vision, orientating for advantageous decisions was impossible. Second, focus and di-

rection were necessary to meet the stated goal of the action. Without focus and direction, a harmony of effort and initiative was impossible.²⁴ The German principles of commander's intent, mission tactics, and main effort—principles which Boyd highly praised in "Patterns of Conflict"—rested upon the successful implementation of focus and direction by C2 entities.

Third, Boyd saw the need for C2 entities to provide the ability to deal with situations that were ambiguous and subject to constant change. Since the nature of war consisted of uncertainty and friction, having the ability to effectively operate in such an environment was crucial. However, friendly C2 elements could utilize rapidity and variety to hamper the enemy's ability to cope with friction. This led to the final role of C2. Boyd saw the need for security as being critical to the maintenance of unpredictability. "Without security one becomes predictable, hence one loses the benefits of the [aforementioned principles]."²⁵ Thus, insight and vision, focus and direction, adaptability, and security to maintain unpredictability were the central tenants of Boyd's teachings on C2.

Boyd then asserted that the nature of warfare was one of friction. Friction was developed and intensified by a variety of factors, including menace, uncertainty, mistrust, deception, and the enemy's tempo. Contrarily, cooperation, focus of effort, simplicity, and implicit understanding reduced the level of friction in warfare. Boyd summarized, "Variety and rapidity tend to magnify friction, while harmony and initiative tend to diminish friction."²⁶ The key to increasing the enemy's friction while reducing friendly-force friction lay in orientation. He taught that nothing impacted C2 more than orientation. It was the *schwerpunkt*. Orientation decided how members of a military force would operate in a certain environment, how they would observe a situation, make decisions, and then act. Orientation—formed by culture, past experiences, personalities, and circumstances—was the primary factor driving a force's decision-making cycle. Viewed in this way, orientation was the key to reducing friction, thus leading to effective command and control.

A common, implicit orientation within a force led to reduced friction, Body argued. The goal was

a command and control system, whose secret lies in what is unstated or not communicated to one another (in an explicit sense) in order to exploit lower-level initiative yet realize higher-level intent ... [to] diminish friction and compress time, hence gain both quickness and security.²⁷

A common, implicit orientation allowed for lower-level initiative—mission tactics—and reduced friction by eliminating explicit communication. This would lead to a force operating faster than the adversary and increasing the latter's friction while decreasing its own—the favorable mismatch. The

The principles of isolation and interaction held true for individuals or ... a military force.

result was effective C2 that allowed for friendly forces to operate inside the enemy's O-O-D-A loops.

After the section on orientation being the basis for a successful command and control design, the "Discourse on Winning and Losing" became more abstract. "The Strategic Game of ? and ?" examined orientation from the perspective of creativity and how a person viewed and interacted with the environment. Boyd explained the necessity for viewing the environment from multiple perspectives and interacting with it in numerous ways in order to understand the situation. "The Strategic Game of ? and ?" was all about analysis and synthesis: "pulling things apart (analysis) and putting them back together (synthesis) in new combinations to find how apparently unrelated ideas and actions can be related to one another."²⁸ Boyd essentially stressed the need for creativity and pattern analysis in order to develop a proper orientation.

Boyd noted that his entire discourse focused on interaction and isolation. While "Patterns of Conflict" focused

on isolation, the "Organic Design for Command and Control" examined interaction. "The Strategic Game of ? and ?" examined both interaction and isolation—two seemingly unrelated concepts. The goal was to enhance the friendly units' ability to interact with each other and the environment while isolating elements of the enemy force. This construct of isolation and interaction was most apparent in the moral-mental-physical realm.²⁹ Not only should friendly forces seek the physical isolation of enemy forces but so too their moral and mental isolation.

Boyd outlined the meaning of moral-mental-physical isolation and interaction:

Moral isolation occurs when we fail to abide by codes of conduct or standards of behavior in a manner deemed acceptable or essential by others outside ourselves ... Moral interaction occurs when we live by the codes of conduct or standards of behavior that we profess, and others expect us, to uphold ... Mental isolation occurs when we fail to discern, perceive, or make sense out of what is going on around ourselves ... Mental interaction occurs when we generate images or impressions that match up with the events or happenings that unfold around ourselves ... Physical isolation occurs when we fail to gain support in the form of matter-energy-information from others outside ourselves ... Physical interaction occurs when we freely exchange matter-energy-information with others outside ourselves.³⁰

At first, Boyd's writings may appear to be directed to the individual. Yet the concepts of isolation and interaction occurred on a much broader scale throughout history as military forces attempted to orient themselves appropriately in a given situation. The principles of isolation and interaction held true for individuals or the conglomeration of individuals in a military force.

Furthermore, Boyd taught that analysis and synthesis were required if a force was to determine how to disorient an enemy force. It would not be an easy task to isolate an enemy in the moral-mental-physical realm. To do so required a great deal of creativity.

Utilizing personal experiences or tried-and-true solutions was inadequate. Boyd argued that seemingly unrelated disciplines must be analyzed (taken apart) and synthesized (placed back together) so that a means by which to disorient the enemy could be found. As the title of the brief suggests, there existed a strategic game of pairing one question with another to identify relationships and patterns. If one was able to find relationships and patterns, Boyd believed the enemy's orientation could then be attacked, he could be folded back inside himself on the moral-mental-physical plane and would be unable to deal with the situation.³¹ Thus, the strategic game of analysis and synthesis promised lucrative results, if played correctly.

The strategic game of analyzing and synthesizing seemingly unrelated matters so that the enemy could be morally-mentally-physically isolated while friendly forces continued to morally-mentally-physically interact marked the entrance of Boyd's philosophy into the abstract. At times, it appeared that Boyd was not lecturing on warfare at all. Yet in the end, he always brought his ideas back into the military realm. The key to success identified in "The Strategic Game of ? and ?" was for friendly forces to interact morally-mentally-physically, thereby strengthening their orientation and cohesion and leading potential enemies or neutral actors to sympathize and potentially ally themselves with the friendly force. On the other hand, the morally-mentally-physically isolated adversary would suffer from internal friction, ambiguity, and indecision. The adversary forces would ultimately collapse or be forced to significantly modify their "political/economic/social philosophy so that they [could] no longer inhibit [the friendly force's] vitality and growth."³² Either way, the friendly force would be victorious and would continue to interact on the moral-mental-physical realm.

Boyd also included smaller presentations within the greater "Discourse on Winning and Losing." In the discourse, Boyd wrote a paper entitled "Destruction and Creation" that outlined how to create or destroy patterns of action that ensured survival in a certain environment. The paper was essentially

about survival—ensuring one's survival while destroying the enemy's ability to survive. To Boyd, everything in life was about survival. Individuals sought to increase their chances for survival, cooperating with one another when necessary to achieve this end. In the process, decisions were made and actions taken to ensure survival.³³ Indeed, Boyd distilled the purpose of the OODA loop, and warfare in general, into one word: survival. Certain patterns of action historically led to survival, while others led to destruction. In this light, Boyd's discourse could be viewed as a means of identifying and adhering to the patterns of survival.

Boyd also crafted a single-slide presentation called simply, "Revelation." Harkening back to "The Strategic Game of ? and ?" Boyd defined winners and losers in terms of their ability to analyze seemingly unrelated entities and synthesize them into something new. The illustration given involved taking apart skis, a motorboat, a bicycle, and toy tractors to obtain rubber treads, a motor, skis, and handlebars. Synthesizing these seemingly unrelated parts, one could create a snowmobile. In "Revelation," Boyd wrote,

A loser is someone—individual or group—who cannot build snowmobiles when facing uncertainty and unpredictable change ... A winner is someone—individual or group—who can build snowmobiles, and employ them in an appropriate fashion, when facing uncertainty and unpredictable change.³⁴

Boyd was attempting to emphasize the importance of analyzing and synthesizing seemingly unrelated parts to find ways to morally, mentally, and physically isolate the enemy and thereby disorient him.

Though largely an afterthought, Boyd also created the short presentation, "The Essence of Winning and Losing." This presentation was a summary of the larger "Discourse on Winning and Losing." Nevertheless, the presentation was significant in that it identified what Boyd saw as his most important ideas. At one point, Boyd noted,

Without O-O-D-A loops ... and without the ability to get inside other

OODA loops (or other environments), we will find it impossible to comprehend, shape, adapt to and in turn be shaped by an unfolding, evolving reality that is uncertain, everchanging, and unpredictable.³⁵

It is little wonder that the OODA loop is the best-known of Boyd's teachings. Yet this concept forms only the basis of a much broader military philosophy that is encompassed throughout the entirety of the "Discourse on Winning and Losing."

Boyd's impact on the entire U.S. military through the creation and teaching of the "Discourse on Winning and Losing" was significant. Yet in no Service was Boyd's philosophy adopted more enthusiastically than the Marine Corps, where Boyd's teachings were dubbed the theory of maneuver warfare.³⁶ Several prominent Marine officers were exposed to Boyd's theories and became ardent followers. These included Gen Alfred Gray, Jr. who first heard Boyd's briefings as a colonel. Upon becoming Commandant of the Marine Corps, Gen Gray released *FMFM 1* in 1989, which was largely based on Boyd's teachings. This publication asserted that maneuver warfare was the official doctrine of the Marines Corps. "Warfare by maneuver," it was said, would allow the Marines to render the enemy "incapable of resisting by shattering his moral and physical cohesion."³⁷ Boyd also personally assisted Col Mike Wyly in revamping the curriculum of Amphibious Warfare School—the Service school for all company-grade Marine officers—to be in line with the theory of maneuver warfare. For the next several years, Boyd taught company-grade Marine officers how to fight and win in warfare.³⁸ Boyd's philosophies were proving effective, whether in the cockpit or within the maritime infantry's domain.

Yet Boyd did not just help the Marine Corps. He often interacted with top-ranking officers in the Army, assisting them with the development of the doctrine of Air-Land Battle. In 1982, the Army adopted Air-Land Battle as its official doctrine, preaching such attributes as initiative, flexibility, and harmony—all principles found in the "Discourse

on Winning and Losing.” Furthermore, Boyd helped lead the Defense Reform Movement of the mid-1970s and 1980s. Later, he regularly interacted with Secretary of Defense Dick Cheney before the Gulf War, providing advice on the military situation in the Persian Gulf.³⁹ The resultant U.S. victory in that war can, in many ways, be attributed to the teachings and advice of John Boyd.⁴⁰ His impact could be felt across the entirety of the DOD.

Even today, Boyd’s military philosophy is as relevant and impactful as ever. As the ancient teachings of Sun Tzu, Boyd’s ideas are timeless. This is largely because Boyd taught about the nature of war while identifying the patterns that conflicts followed and the principles that produced victory. Rather than developing a tactical field manual that would lose relevance as it aged, Boyd encapsulated theories and principles that are as enduring as war itself. His philosophy can truly be called “psychological warfare.” Everything Boyd taught involved understanding the enemy’s thought process and getting inside his mind. “People fight wars,” he said, “It [is] in the minds of men that war must be fought.”⁴¹ To Boyd, warfare was a psychological discipline. As such, understanding thought processes, decision-making patterns, and the means by which men interact or motivate themselves to fight is a necessity for victory.

Truly, Boyd’s military philosophy is a recipe for victory. By building on the combat foundations he learned as a fighter pilot, Boyd was able to grasp the nature of war and identify the principles for success in combat. His was a theory of psychological warfare. He sought to truly understand the enemy—his motivations, intentions, and thought processes. Through this understanding, Boyd taught that one could disrupt the enemy’s decision-making process by making decisions faster and changing the situation so rapidly that the enemy could not orient himself appropriately to meet the circumstances. Ultimately, this would shatter the enemy’s cohesion in the moral-mental-physical realm. These teachings of Boyd’s are timeless. No matter what new weapons may be cre-

ated, regardless of where future wars will be fought, and irrespective of what reasons conflict occurs, Boyd’s philosophy remains the key to victory. His ideas are as enduring as those of Sun Tzu of ancient times. Col John Boyd, then, can be called America’s Sun Tzu.

Notes

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Indoctrinating Without Doctrine

If *MCDP 1* is truly the Marine Corps' cardinal doctrinal publication, we must incorporate it more deliberately in the indoctrination process of entry-level training

by Capt Keith Rabideau

At the beginning of all twelve-week recruit training cycles, every drill instructor raises their right hand and recites the Drill Instructor's Creed in front of their platoon of brand-new recruits. Along with affirming that these recruits are entrusted to their care, they pledge to develop them into "smartly disciplined, physically fit, and basically trained Marines *thoroughly indoctrinated* in love of Corps and country"¹ (emphasis added). Before the drill instructors ever have an opportunity to do that, every student at Drill Instructor School learns recruit training is conducted through a "thorough *indoctrination* to our history, customs, and traditions"² (emphasis added). Developing a love and respect for our Corps through its history, customs, and traditions is at the center of the magic that occurs on the depots to make Marines. There is more to an indoctrination process though than loyalty, rituals, and the rote memorization of history. What is critically missing in this indoctrination process is *doctrine*. In fact, there is almost no doctrine in *any portion of the entry-level training pipeline*. The Marine Corps prides itself in the hallmarks of a Marine—spirit and discipline. Spirit and discipline are fundamental, ideological changes that recruits undergo as a part of their transformation from a civilian to a Marine. A third ideological shift must occur at recruit training to a *Warfighting* mentality. Marines must be indoctrinated with our *doctrine* to learn how we think and decide, starting from *MCDP 1*.

>Capt Rabideau is an Infantry Officer by trade and passionate about Marine Corps doctrine and philosophy. He is currently serving as Company Commander of Golf Company aboard Marine Corps Recruit Depot Parris Island. Through six training cycles, he has instructed recruits on *MCDP 1*, *MCDP 4*, *Core Values*, *Ethics*, and *Risk Management* just to name a few. His company has adopted the incorporation of *MCDP 1* to recruit training for three training cycles now.

Our doctrine is in part what separates the Marine Corps from other Services, and our distinguishing doctrine is *MCDP 1*. It defines how Marines, both individually and collectively, should *think* and *decide* by utilizing a "state of mind born of bold will, intellect, initiative, and ruthless opportunism."³ As the "authoritative basis for how we fight and prepare to fight,"⁴ it is a part of the organizations' collective conscious-

after the original publishing of *MCDP 1*—carries more weight now than ever as Marines operate farther "from the flagpole" with strategic implications.⁶ It is not just for combat arms, either—the intelligence specialists, embarkers, communicators, engineers, expeditionary airfielders, or air traffic controllers will be operating at smaller, more distributed levels. Marines, starting at recruit training, must learn the tenets of *MCDP 1*

What is critically missing in this indoctrination process is doctrine. In fact, there is almost no doctrine in any portion of the entry-level training pipeline.

ness as maneuverists. This takes on an even greater authoritative basis with the *Commandant's Planning Guidance*.⁵ The expectations of small unit leaders' decision-making ability have never been higher for future distributed, littoral operations and contested enemy weapons engagement zones. The notorious "strategic corporal/lance corporal/private first-class" concept that emerged out of the three-block war—just two years

to prime them for development into decision makers. Understanding core concepts such as maneuver warfare, philosophy of command, mission tactics, and commander's intent will be integral to the Corps' success. Yet, despite the gravity of our doctrine and this future capability requirement, our Corps' understanding and application of its doctrine is weak at best and seemingly left to the wayside.

At recruit training, Marine Corps Recruit Depot Parris Island’s (MCRD PI) current period of instruction (POI) devotes one total hour to *MCDP 1* in the 84 days the training companies account for them. That one-hour class is taught by their series commander about how *MCDP 1* applies to the Chosin Reservoir—with no previous instruction on *MCDP 1* prior to this case study or follow-on instruction afterward. As a previous instructor for this class, I can affirm it is a tall order to convey the tenets of *MCDP 1*, describe what the Chosin Reservoir means in the big picture for the Korean War, and tie the two together in just one hour without students having any prior exposure. No matter what way you slice it, it feels like a dart thrown at the wall of recruit training’s fourth phase instead of deliberately designing a method of progression for comprehension and ownership of *MCDP 1*.

After recruit training, all Marines without the infantry MOS move on to Marine Combat Training (MCT) in the entry-level training (ELT) process. At MCT, 2.75 hours are spent in 29 days on review of *MCDP 1*, completing a homework sheet, and participating in a guided discussion. In total, that brings time devoted to *MCDP 1* as just 3.75 in hours in 113 days between recruit training and MCT.

In the near future, MCRD PI is changing its POI. With MCT condensing from 29 to 21 training days, they are divesting their 2.75 hours of instruction on *MCDP-1* and diverting it to the recruit depots. To account for this 2.75-hour divestment, MCRD PI’s new training schedule has added .75 hours of instruction as a guided discussion taught by their senior drill instructor. This brings the total instruction for future recruit training and MCT to 1.75 hours in 111 days—actually taking a step *backward* in the amount of instruction the organization is devoting to *Warfighting*.

Infantry Marines are provided a small addition of instruction at the School of Infantry through four total hours of informal discussion. The newly piloted Infantry Marine Course (IMC) of the future, however, seems to be the



EABO. (Photo by LCpl Samantha Villarreal.)

only exception in ELT for understanding and application of *MCDP 1*. IMC plans to teach a healthy 14 hours over their 73-day POI through guided discussion, tactical-decision games (TDG), and case studies. The first lesson starts as early as training day one. Prior to each lesson, Marines read a chapter of *MCDP 1* and a case study assigned to it. They then conduct a squad-level TDG and guided discussion on what they read with its relation to the TDG and its associated learning objectives. Overall, they conduct four guided discussions, four case studies, and four TDGs. Capt David DeLong, Company Commander at Infantry Training Battalion–West, observes that the impact of *MCDP 1* instruction is noticeable: “the Marines, when presented with a complex scenario or doctrinal topic, were able to intelligently comprehend, articulate, and solve the problems presented. Many of them came up with quality solutions for the TDGs and asked inquisitive questions that demonstrated a deeper

understanding of the art of war, maneuver, and creative thinking that we were not expecting.”⁷ So, future *MCDP 1* training for *infantry* Marines appears to be robust and the young Marines there are performing—but therein lies the problem for both the present and the future. One of the most fundamental misunderstandings of *MCDP1* is that it only applies to combat and that combat only applies to the infantry. This misunderstanding broadens the knowledge gap of our common doctrine between combat arms and those that support them. Lessening this gap is a necessity for the institution in order to find a common language during execution.

The doctrinal publication is not merely guidance for action in combat—but a way of thinking and acting in war, crisis, and peace across all MOS communities. Supporting units and agencies that have a greater understanding of *MCDP 1* will have a greater understanding of maneuver and how their supported unit thinks. This un-

ELT Stage	MCRD	MCT	School of Infantry/IMC	MARINE TOTAL	INFANTRY TOTAL
Current	1	2.75	4	3.75	5
Future	1.75	0	14	1.75	15.75

Figure 1. ELT hours for MCDP 1. (Figure provided by author.)

derstanding improves implicit communication, allows for supporting units to better anticipate requirements, and generally increases the overall quality of the support provided. In addition to applying concepts of *MCDP 1* externally to the units they support, they can also be applied internally within their own jobs too.

One core concept of *MCDP 1* that is applicable internally is maneuver warfare. Maneuver warfare applies just as much in garrison, support, maintenance, and administration as it does on the battlefield. Maneuver warfare means to be thinking about how we can always achieve a *position of advantage* and then exploiting that advantage with the purpose of causing the rapid defeat of our opponent or task. That position of advantage could be a physical position in time-space, a mental position of attitude, or a psychological position against a thinking opponent. So, an administrative clerk can maneuver to a *temporal* position of advantage by innovating an increase of efficiency for a routing process and delivering an advanced party's travel plan to the adjutant faster than the previous routing process. This maneuver by the clerk creates decision-time and enables other staff and sections (e.g. S-4, supply, finance) to exploit and act in the time provided to seek their own positions of advantage to facilitate that travel. While the units and agencies that non-infantry communities maneuver against are not always the enemy, this approach *still works*. The IMC has clearly taken a progressive leap forward by expanding upon *MCDP 1* here, but it must *also* occur at a basic level for all MOS communities.

It may not be as important for recruits and new Marines to learn about and embody *MCDP 1* at ELT if they learn it in the FMF. An argument could be made that it's incumbent on the small unit leadership and company-grade officers in the FMF to sustain the transformation and teach them *MCDP 1*. Unfortunately, all too often this does not occur. *MCRP 6-11D, Sustaining the Transformation*, the Marine Corps publication that is designed to assist leaders at all levels to help Marines

transition from ELT to the Fleet and succeed, makes no mention of *MCDP 1*.⁸ There is no annual training requirement or training and readiness standard for it.⁹ Because it is not emphasized at ELT when it *is* reviewed in the FMF, Marines do not view it as important. Anecdotally, there have been many staff non-commissioned officers in units I served in that have *never* read *MCDP 1*. Some learned bits of it from a leader in their chain of command. Some learned it from a mentor outside of their unit. Some learned it at rank-appropriate professional military education (PME). Some, and especially those outside of combat arms, reported *having never learned it at any of these things*. Lance Corporal Seminar assigns zero hours for it.¹⁰ Corporal's Course has 3.5 hours of instruction for it, but it is limited to an introduction and the nature of war.¹¹ It's not until Sergeant's Course that enlisted Marines have any meaningful dialogue of what *MCDP 1* is. The rank and responsibilities of a sergeant are too late to have a meaningful understanding of these concepts! Is the Marine Corps *really* willing to leave our doctrine up to chance for the littoral, strategic junior Marines out there that are without the organization's philosophy for making decisions?

PME	E3	E4	E5	E6	E7	CAREER ENLISTED
Hours	0	3.5	5	3	2	13.5

Figure 2. Rank-appropriate PME hours for MCDP 1. (Figure provided by author.)

Although it is a useful measuring bar, it is important to note that the quantity of hours devoted *specifically* to *MCDP 1* is not the sole metric of comprehension of doctrine. There are other quantitative and qualitative metrics to consider. An important case study here is The Basic School (TBS). If you were to estimate how many hours of instruction that *officers* receive, you might assume that the hours are much higher in contrast to enlisted ELT. However, officers at TBS only receive 3.5 hours of instruction on *MCDP 1*, and they do not receive any additional formal instruction on

doctrine until their career-level school as a captain. What TBS does that other ELT does not do as effectively, or sometimes even at all, is the reinforcement of that instruction. Over and over again through lectures, discussions, TDGs, sand table exercises, and field exercises, their instructors and staff platoon commanders are *repeatedly* tying these concepts back into whatever else they are doing. This creates a *culture* of warfighting. For comprehension to stick for students, it cannot be a check-in-the-box mentality to move on without referencing it again until an examination. It must be *a part of the process* for ELT.

To resolve this institution-wide problem we must teach *MCDP 1* more thoroughly in ELT, starting at recruit training. A field or infantry-centric training environment can facilitate some higher fidelity learning moments with select warfighting concepts, but its foundations apply to all MOS communities and must be laid earlier in the recruit training POI. For the scope of recruit training only core concepts need to be taught about *thinking* and *deciding*, with special emphasis on Chapter 1, "Nature of War," and Chapter 4, "Conduct of War."

"Nature of War's" concepts of the human dimension and the friction + uncertainty + fluidity = disorder formula must be taught to the young Marines who could feel the effects of the nature of war more than anyone immediately following ELT when the country is at war. In fact, recruits feel the effects of the nature of war in recruit training where drill instructors simulate high-stress, chaotic environments that mimic warfare. Understanding the nature of war and how it affects them can be an effective resiliency tool against attrition for both recruit training and combat.¹² This resiliency, or lack thereof, will make or break their ability to out-cycle the enemy, *think* coherently, and be *decisive*.¹³ After recruits understand the nature of war, they should then learn how to wage it.

"Conduct of War's" maneuver warfare, philosophy of command, mission tactics, and commander's intent in Chapter 4 must be taught to prime them for development into future de-

cision-makers in those distributed, littoral operations. To be clear, the expert *application* of these Chapter 4 concepts is not the priority for recruit training, nor should it be. Recruits must learn instant willingness and obedience to all orders before application of this. As they progress in their development of small unit leadership throughout recruit training, though, warfighting and maneuver must be incorporated. Learning about the spectrum of attrition and maneuver and decentralized command will shape their ability to interpret higher intent, prioritize, and *decide*.

Warfighting and maneuver should be held on the same pedestal as our core values of honor, courage, and commitment and be just as important to our identity. Language from *MCDP 1* should be laced into what recruits hear, from the yellow footprints to their eagle, globe, and anchor ceremony when they become Marines. In recruit training, classes should be taught *parallel* with our core values in early training days. After initial exposure, the large majority of this instruction should have little impact on training time. Similar to how much of the recruit training POI ties classes back to our core values, classes



SULE. (Photo credit: OCS Official Website.)

staff interweaving it into their everyday vocabulary to manifest a *culture* of Warfighting in the training process. Assessment and measures of effectiveness for the instruction of *MCDP 1* to recruits must move away from the rote memorization and testing at ELT towards making practical judgments. One way this could be done is by reshaping

little-to-no training hours are devoted to *MCDP 1* in the ELT pipeline, and there is no training requirement for new Marines as they transition to the FMF or as they progress through early rank-appropriate PME. While *MCDP 1* core concepts do not have to be *applied* expertly at recruit training, the spirit of the maneuverist and warfighting must still be *understood* and indoctrinated here. Indoctrinating without doctrine may prove more and more dangerous for the Corps as it continues to push the limits of small unit leaders and decentralized command. If *MCDP 1* is truly the Marine Corps' cardinal doctrinal publication, we must incorporate it more deliberately into the indoctrination process of ELT, specifically, and training and education in general. If it is not, then call it something besides doctrine and move on.

MCDP 1 is critical because it is how we think and decide. However, little-to-no training hours are devoted to MCDP 1 in the ELT pipeline ...

can be updated to tie meaning back to Warfighting and fit into a similar academic footprint. With the adjustment to the POI, Drill Instructor School will need to train the trainer by teaching drill instructors these concepts so they can effectively reinforce them.

Currently, students at Drill Instructor School receive no training on *MCDP 1*. To facilitate reinforcement for recruits, drill instructors as well as supporting instructors at Weapons and Field Training Battalion should receive thorough training on *MCDP 1*, potentially for the first time in their career. Concepts should be reinforced for recruits by drill instructors and training

the Crucible, recruit training's culminating event. Recruits, acting as small unit leaders of their peers, can be placed in scenarios where they are forced to make practical judgments that incorporate *MCDP 1* core concepts, similar to Officer Candidates School's Small Unit Leader Evaluations. Then, beyond recruit training, *MCDP 1* should be steadily delved into at greater depths at follow-on schooling—especially at MCT, Lance Corporal Seminar, and Corporal's Course.

Spirit, discipline, honor, courage, and commitment are critical because it is *who we are*. *MCDP 1* is critical because it is how we *think and decide*. However,

Notes

1. The quote here is from the most recent version of the Drill Instructor's Creed. The original codification of the Drill Instructor's Creed dates back to a Regimental Order in 1961. There have been several small modifications since then, including the addition of "These recruits are entrusted to my care" and the omission of "God" in the "indoctrination in love of God, Country, and Corps," but it has generally stood the test of time. Marine Corps Recruit Depot Parris

Island, *Regiment Order 1510.1A*, (Parris Island, SC: 1961).

2. Students learn this via instruction on the Recruit Training Order, the authoritative directive on how recruit training should and must be conducted. Marine Corps Recruit Depot Parris Island, *Depot Order 1513.6G, Recruit Training Order*, (Parris Island, SC: 2019).

3. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: 1997).

4. Ibid.

5. Gen David H. Berger, *38th Commandant's Planning Guidance*, (Washington, DC: 2019).

6. Gen Charles C. Krulak, "The Strategic Corporal: Leadership in the Three Block War," *Marines Magazine*, (Quantico, VA: 1999).

7. Personal interview between author and Capt David DeLong on 11 March 2021.

8. It mentions "warfighting" only once when it briefly discusses the importance of selecting

the best noncommissioned officers to train and sustain values and warfighting ethos. Headquarters Marine Corps, *MCTP 6-10A, Sustaining the Transformation*, (Washington, DC: 2018).

9. Except for the ELT training and readiness manual for MCRD-LDR-1009. Headquarters Marine Corps, *NAVMC 3500.18C, Entry-Level Training and Readiness Manual*, (Washington, DC: 2013).

10. Lance Corporals Leadership and Ethics Seminar's main publication focus is *Leading Marines*. Staff, *Lance Corporals Leadership and Ethics Seminar, Director's Guide*, (Quantico, VA: Marine Corps University, 2014).

11. There is a 42-hour umbrella of "Warfighting" for Corporal's Course, but only 3.5 hours are focused on doctrine while the remainder is centered on tactics, operations, the MAGTF, and joint operations. Staff, *Corporals Course, Program of Instruction*, (Quantico, VA: Marine Corps University, 2018).

12. Anecdotally, I have observed multiple Senior Drill Instructors talk recruits "back into the fight" when they want to quit recruit training by discussing with them the *MCDP 1* concepts of "friction" or "uncertainty" in training.

13. The "cycle" in "out-cycle," of course, referring to John Boyd's Observe-Orient-Decide-Act (OODA) loop from his original unpublished 4-slide PowerPoint briefings. The OODA loop, along with his theories of maneuver, had a significant influence on the making of *MCDP 1* that was published just a year later. John R. Boyd, "The Essence of Winning & Losing," (1996).



MAJGEN HAROLD W. CHASE PRIZE ESSAY CONTEST



The annual MajGen Harold W. Chase Prize Essay Contest invites articles that challenge conventional wisdom by proposing change to a current Marine Corps directive, policy, custom, or practice. To qualify, entries must propose and argue for a new and better way of "doing business" in the Marine Corps. Authors must have strength in their convictions and be prepared for criticism from those who would defend the status quo. That is why the prizes are called Boldness and Daring Awards

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Reflection in Action

How Marine leaders retain tempo while affecting ill-defined problems

by Maj Joseph R. Mozzi

The actions and decisions of Marine junior officers and enlisted leaders will shape the future fight far more than all-domain technological advantages. The Marine Corps will not achieve competitive advantage through concepts, structure, and equipment without a strong core of leadership at the tactical level capable of thriving in uncertainty.¹ As new concepts increasingly disperse Marines throughout the operational environment in ever-smaller footprints, junior leaders will increasingly find themselves on the leading edge of competition and conflict. Environmental complexity, the demands of competition, and the lethality of conflict are all rapidly increasing. Within these environments, the risks of ceding the initiative to an adversary become increasingly prohibitive. Success will more than ever require “leaders and organizations that can understand the nature of a given

>Maj Mozzi is an Artillery Officer. He is a student at the U.S. Army's Command and General Staff Officers Course at Fort Leavenworth, KS.

situation and adapt to it faster than their opponents.”² Given these challenges, leaders must have the intuitive skills to seize the capacity for independent action by engaging in, and maintaining momentum through, an action-centric dialogue with uncertainty. This thought process of *reflection in action* empowers leaders to understand problems while affecting them.³ Reflection in action sustains the aggressive pursuit of tempo that Marine tactical leaders are known for and remains strongly nested within maneuver warfare's broader effort of generating deteriorating situations within an adversary's system.⁴

Reflection in Action

Applied in situations where leaders lack understanding but must act immediately to retain advantage, reflection in action requires all the factors of creative ability, military judgment, and moral courage in application.⁵ While not a planning process, reflection in action is a process well nested within the broader operations process as an intuitive rapid decision-making strategy applied while there is time to influence the outcome of an immediate situation in execution. Where doctrinal planning models generate understanding through analysis, synthesis, and reconnaissance, reflection in action builds understanding by directly engaging a problem. The process requires leaders to dismiss the notion that a lack of understanding prohibits action. Leaders instead view action as a reflective dialogue with the situation, becoming adept at initiating action with incomplete or inaccurate understanding.⁶

Understanding is, in a sense, the mental model of a reality. It is the consistency between understanding and reality that provides a “capacity for independent action.”⁷ As coherence between understanding and reality increases, so does the leader's ability to effectively act. The relationship between models and reality is one of constant interaction where the outward-focused leader engages with the environment. Observations of reality shape and formulate the leader's understanding while the resulting understanding shapes the nature of future actions, inquires, and observations within the environment. The product of this external orientation is increased understanding.⁸ Without this interactive process, the leader's understanding becomes increasingly dissociated from reality as environmental change diverges from understanding.



Marine leaders require the intuitive skills to make decisions at speed to maintain momentum in combat. (Photo by Cpl Nicholas Lienemann.)

This disassociation contributes to disorder, which reduces the capacity for effective and independent action.⁹ In the case of reflection in action, leaders actively drive reality and understanding together through framing, anticipation, and action. This driving process allows the leader to act in the face of incomplete understanding, seizing the capacity for independent action by actively shaping the situation while building understanding.

It is within this process of seizing the capacity for action that reflection in action becomes a dialogue with the situation. The leader interacts with the situation, the situation interacts back, and both are affected. Reflection in action begins with framing an initial understanding of the problem and imposing a discipline on the situation by initiating action. This begins the dialogue and can be undertaken with an uncomfortable lack of clarity about the true problem. The leader remains aware of their initial understanding and is now quite literally a part of the situation.¹⁰ The situation responds to actions in the form of developments and consequences which give the situation new meaning. Leaders consider not only their immediate actions but the likely branches to which they lead. While these branches may provide a variety of options, they may also take the form of binding implications which prohibit or dictate options.¹¹ The leader who can rapidly identify the binding implications of an initial action can more readily anticipate and execute subsequent actions. Leaders apply judgment with the situation to identify moments to reframe the problem and impose subsequent discipline through action and anticipation. The awareness, anticipation, and recognition of branches and binding implications serve to both shape and define the problem being faced as the leader drives the situation toward an end state.

The idea of forward momentum is inherent in the reflection in action as it is a process of simultaneously attempting to both understand and shape a situation. Correspondingly, the initial problem frame must be one through which the leader anticipates they can find a solution.¹² The demand for action



Reflection in action: understanding problems while affecting them sustains tempo in combat.
(Photo by Sgt Ferdinand Thomas.)

is the first step in the interactive process to align understanding with reality. The interactions with the environment contribute accuracy to understanding, which forms the basis for the application of judgment through further interaction with the environment. Reality both shapes, and is shaped by, the leader's level of understanding. Understanding and reality change and converge to the desired state through the reflection in action process.

Reflection in Action and the OODA Loop

While reflection in action may resemble more well-known mental processes such as the Observe-Orient-Decide-Act (OODA) loop, achieving a more holistic understanding of the OODA loop helps place reflection in action in its proper and complementary context.¹³ Reflection in action is a process to be employed at the sharp end of execution, at the level where absolute speed and tempo of decision making is frequently the measure of success or failure.

Many are familiar with the idea that the individual who can cycle through the OODA loop faster than their adversary will gain and maintain advantage, forcing the adversary to operate within an increasingly outdated understanding

of reality. While the speed of decision is an often convenient shorthand for the OODA loop, speed alone is not sufficient to produce the intended outcome.¹⁴ Rather, the OODA loop is more concerned about the effects of actions on the adversary and less on the absolute speed of those actions. The OODA loop seeks to seed an adversary's decision-making process with "uncertainty, doubt, mistrust, [and] confusion ... so he can't cope with events."¹⁵ It aims to produce effects within the adversary's system that are subtle, indistinct, and irregular while appearing to be otherwise.¹⁶ It is not incumbent on absolute speed but on a variable tempo of disruptive actions that are born from constant observation and orientation fed by a continuous stream of feedback. Decision making exists at every level of leadership, but the OODA loop as envisioned by Col John Boyd is perhaps most at home within the planning and the operations process: the cyclical, evolutionary, and interactive process of planning, execution, and assessment.¹⁷ The collective ability of staffs and leaders to understand the environment, measure the tempo of operations, and synchronize actions through iterative planning maximizes the OODA loop's potential within operations.

Reflection in action at the lowest levels of execution preserves the high tempo of action that contributes to success and its execution ensures rapidity and aggressive action at every opportunity. Marine Corps fundamentals of ground combat stress maintaining momentum through aggressive and rapid action while possessing the audacity to seize every opportunity to strike decisive blows. Speed and success must be exploited to disrupt the enemy's ability to recover.¹⁸ Reflection in action melds uncertainty and momentum together, allowing leaders to gain and maintain advantage, shape their immediate environments, and win. This action of affecting while understanding is the generator of feedback within the environment to be capitalized on within the overarching operations process.

Getting to Reflection in Action

While reflection in action can be taught, it should become an intuitive habit of thought and action. It demands a solid foundation of training and education to build the technical skills and judgment that tactical leaders will require in the next conflict. It also requires practice to build reflection in action as an intuitive habit that will yield results on the battlefield. This practice requires that leaders empower their subordinates to experiment with uncertainty in training, to make—and recover from—mistakes, and accept prudent risk. Beyond empowerment, it requires leaders to demand disciplined initiative and judgment from subordinate leaders and to refocus on and adhere to the cooperative ideals of mission tactics.

The process of building the skills of reflection in action will be wrought with both failure and success, and units should embrace and learn from both in training to ensure success in combat. It requires leadership teams and staffs to become more adept at integration and adaptation. Leadership must embrace the immediate advantages generated by small unit leaders employing it to control the tempo of operations to impose deteriorating situations on their adversaries. This capitalizes on the complete potential of Marine Corps junior leaders. It will be at times painful, yet the

leader who thrives in rapidly evolving and uncertain environments is worth the investment.

Notes

1. Furthering discussion on comments by the Commandant: “We can have the very best concepts, we can have the ideal structure, we can get everything else right, we can buy the right equipment. It won’t work ... if we don’t upgrade the people part.” -Gen David H. Berger, Remarks at the Marine Corps Association National Breakfast, (remarks, Quantico, VA, Marine Corps Association National Breakfast, September 2021).

2. Headquarters Marine Corps, *MCDP 1-0 Marine Corps Operations*, (Washington, DC: March 2019).

3. The concept of reflection in action is credited to Donald Schön, *The Reflective Practitioner, How Professionals Think in Action*, (New York, NY: Basic Books, 1983).

4. Thank you to LtCol Patrick Murray, Academics Director, The Basic School for mentorship and counsel in helping to synthesize these concepts.

5. These factors form the Marine Corps’ understanding of education, found in Headquarters Marine Corps, *MCDP 1-3 Tactics*, (Washington, DC: April 2018).

6. The Marine Corps places “understanding” at the top of the information hierarchy, equating it to situational understanding. Specifically, *MCDP 6* states that understanding results when we synthesize knowledge to arrive at a complete mental image of the situation. This is an incomplete picture of understanding and could imply that a leader can have a complete absence of understanding. In fact, leaders will more frequently have incomplete levels of understanding, equating to incomplete or inaccurate mental models of the situation. A given level of understanding remains present in any situation. See Headquarters Marine Corps, *MCDP-6 Command and Control*, (Washington, DC: April 2018). The idea of a “reflective conversation with the situation” is credited to Donald Schön in *The Reflective Practitioner*.

7. John Boyd, “Destruction and Creation” *Goalsys*, (September 1976), available at <https://www.goalsys.com>.

8. Ibid.

9. Ibid.

10. *The Reflective Practitioner*.

11. Ibid. When faced with an incomplete understanding of a situation, the leader must create coherence in the situation in the form of a discipline that can be imposed upon it. This takes the form of an informed action. The leader then mentally anticipates the consequences of such an action. This consciousness forms the leader’s perception of the problem as actions are simultaneously defining and shaping it.

12. Ibid. This is the product of training and education manifested in the face of uncertainty. Even in the face of uncertainty, the leader guides their initial discipline of the situation with a frame of the situation through which they believe they can arrive at a solution. This does not imply they have a definitive vision of the solution itself. The frame instead provides the leader with maximum flexibility through which to begin action and anticipation of consequences.

13. Even the term “OODA loop” misconstrues the complete nature of the concept, which was far from the simplified cyclical portrayals common in much of doctrine. The final “sketch” of Boyd’s OODA loop can be found in Grant Hammond, *The Mind of War: John Boyd and American Security*, (Washington, DC: Smithsonian Books, 2004).

14. Daniel Ford, *A Vision so Noble: John Boyd, the OODA Loop, and America’s War on Terror*, (Scotts Valley, CA: CreateSpace Publishing, 2010).

15. John Boyd in Ian Brown, *A New Conception of War: John Boyd, The U.S. Marines, and Maneuver Warfare*, (Quantico, VA: Marine Corps University Press, 2018).

16. *A Vision so Noble*.

17. Headquarters Marine Corps, *MCWP 5-0 Marine Corps Planning Process*, (Washington, DC: August 2020).

18. Headquarters Marine Corps, *MCWP 3-10 MAGTF Ground Operations*, (Washington, DC: April 2018).





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Board Wargaming

Combat

by Dr. Christopher R. Cummins, Publisher, Decision Games

We continue from the last issue where we examined the basics of how zones of control (ZOCs) work to model unit-level situational awareness, intelligence/surveillance/reconnaissance, and tactical influences such as fields of fire. In this issue, we are moving on to the basics of combat tactics in board wargaming.

In this issue, we are going to look at how combat is simulated in most hex and counter wargames. In most classic wargames, the sequence of play is usually a movement phase (or step) followed by a combat phase. First, one player moves any or all of their units up to their movement allowances and then conduct any combat situations, then the other player does the same.

Combat Basics

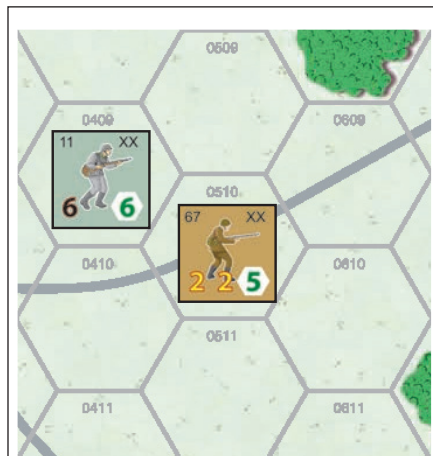
Combat occurs when opposing units are adjacent after movement. In most wargames, combat is mandatory between adjacent units or units in an enemy zone of control (EZOC). The side that just moved and now must conduct combat is termed the attacker (even if, in the overall course of the game/battle, that side might be on the defensive) while the other side is termed the defender.

The attacker has his or her choice in the order of attacks. This has important tactical consequences as we will see later in this article. Each individual combat is conducted and the results implemented before moving to the next combat.

In each individual combat situation, the attacker designates the attacking units and the adjacent defending units they are attacking. A lone defender could potentially be attacked from all six adjacent hexes if the attacker can move units into them. In most wargame situations, the defending units have

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been positioned to prevent this possibility, and, in fact, the opposition has probably arranged their units into a line or other defensive position such that the number of potential attack hexes has been limited to two or three per defending unit.



Example #1, we see a German unit attacking a Soviet unit in Leningrad. The attack is 6 for the attacker and 2 for the defender, so this would be a 3-1 attack.

Two-step Units

A brief aside here about unit combat values. In early board wargaming, units had only one side (or step). This meant either the unit was in play or removed from the game (eliminated). Later games introduced the concept of two-sided units, a stronger or full-strength side, and a weaker or reduced strength side (see example #2). Most units would

Example #2



start the game on their full-strength side, and then, as a result of combat loss, be flipped to their weaker side. These are also referred to as “two-step” or “one-step.”

The use of two-step units in wargame design allows for modeling size and qualitative differences. Size is straightforward: a unit representing 1,000 combatants might have two sides (i.e. a 10-strength side and a 5-strength side) while a unit representing 500 combatants has one (5-strength) side. Qualitative differences such as elite training or better weapons might be shown by 500 elite troops having a 6-strength value on their full-strength side to represent a 20 percent qualitative edge and a 3-strength reduced-strength side.

Combat Results Table

Most wargames have a Combat Results Table (CRT) that is consulted to determine the outcome of individual battles. The columns are usually ratio-based (Example #3a *Leningrad* CRT), but sometimes they are differential based (Example #3b *Little Round Top* CRT). The rows are die roll results, usually from a six-sided die, but sometimes a ten-sided die. An individual combat

Example #3a Leningrad CRT

Die Roll	1-2	1-1	2-1	3-1
1	-/E	-/2	-/1	1/1
2	-/2	-/1	1/2	2/2
3	-/2	1/2	2/2	1/1
4	-/1	2/2	1/1	2/1
5	1/2	1/1	2/1	1/-
6	2/2	2/1	1/-	1/-

Example #3b Little Round Top CRT

	-1 to 0	+1 to +2	+3 to +4	+5 to +6
1	Ar	Ar	Ac	-
2	Ac	Ac	-	Dc
3	Ac	-	Dc	Dr
4	-	Dc	Dr	Dr
5	Dc	Dc	Dr	Dr
6	Dr	Dr	Dr	Dx

situation is usually a case of totaling the combat strength on each side, then dividing the attacker strength by the defender strength for a ratio table or subtracting the defender strength from the attacker in the case of a differential table. This determines which column resolves the combat. Then a die is rolled to determine the row and the result. With the combat results getting progressively better for the attacker as the odds or differential increase, it generally stands to reason that bringing the most strength to bear in each combat is desirable.

Combat Results

Most games feature combat results of retreats and losses. These results might be mixed, such as an exchange result where both sides lose one unit from those involved in the specific combat. In most games, if the defender cannot retreat, the retreat is converted to an elimination or step loss. Sometimes the results are optional where the defender takes their choice of retreats or losses leading to decisions about whether the hex/location is important enough to take losses rather than retreat.

It is important to take a few moments to study the CRT when first learning a new wargame. Which column ap-

pears the most balanced with equal or nearly equal results for the attacker and defender? Moving to the right of that column, what is the first column that has no adverse results for the attacker? When planning the defense, you want to prevent the attacker from achieving this column or higher whenever possible. As the attacker, you want to be on this column or higher in most attacks. This may lead to situations where the attacker has a choice of, for example, one 6-1 attack or two 3-1 attacks, which might be the dilemma of inflicting a certain defender loss versus pushing the defender back with some potential for losses. It might also lead to other situations where the attacker must attack other defenders at lesser odds in order to make a 3-1 or better possible. At this point, it is important to know what happens to the attacker at lower odds. Maybe a 1-2 attack only has “attacker retreat” results while a 1-3 has “attacker eliminated” results.

After gaining familiarity with the CRT itself, the next thing to review is what situations can change the column used for resolution. This usually includes terrain, supply or supply line, combat support (artillery, armor, etc.), and special situations.



Example #4. An attack at 3-1 against a defending unit on a woods hex with a shift of one left (1L) becomes a 2-1.

How Terrain Affects Combat

Just as terrain can be rated for move-

ment cost, it can also be rated for how it affects combat. Clear terrain is generally the base terrain and has no effect. Terrain can affect defensive combat strength in several ways. First, it can simply add combat strength. In *Little Round Top*, Light Woods hexes add +1 to combat strength while Heavy Woods hexes add +2. In many classic operational-level (units at battalion to division-level) wargames, combat strength was doubled on good defensive terrain such as rough hexes or behind a river. More recent wargames have rated terrain in terms of combat shifts, meaning that better defensive terrain shifts the combat ratio or differential to the left.

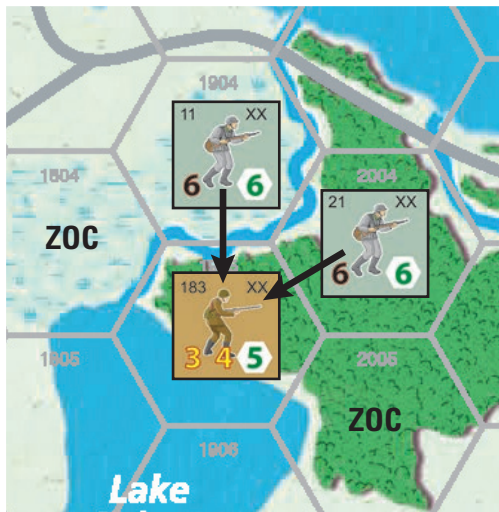
The defender can position units on good defensive terrain, but also can use terrain to affect combat indirectly by channeling or preventing movement. Some terrain may be prohibited to all or certain types of units. For example, sea/lake hexes are almost always prohibited to all land units (no surprise), and crossing major river hexsides is often prohibited at least to armor and mechanized units except where bridged. But even terrain that may be accessible may not be reachable in the current movement phase due to insufficient movement points (of course, it might be reachable in the next movement phase, but the defenders will have a turn to reposition or reinforce). A better solution in many games is careful deployment such that the defending units' ZOCs preclude an attacker from getting to an advantageous hex.

Concentric and Flank Attacks

What are advantageous hexes? The simplest form of this is a concentric attack in which the defender unit is surrounded by adjacent enemy units, enemy zones of control (EZOC), or prohibited hexes (see example #5).

Second, units can prevent retreat via their ZOCs even if not attacking. This most often occurs when there are two or more combats with defenders in adjacent hexes and an attacker is able to advance after combat to exert a ZOC and prevent a retreat by the other (see example #6).

So we learn the weakness of defending every hex in a line. Let us look at



Example #5. The Soviet unit in hex #1905 is attacked by two German units in #1904 and #2004. The Soviet unit is surrounded by German units, their ZOCs, and can not retreat into Lake Peipus across the lake hexsides. German total is $6+6=12$ versus the Soviet defense strength of 4 so a 3-1. While the defender does receive a 1L shift for the woods hex, the attacker receives a 2R shift for the defender not having a valid supply line so the 4-1 column is used.

Summary

We have examined how the mechanics of combat work in board wargaming and reviewed the basic tactics that come into play in the combat phase. This concludes our initial series introducing board wargaming.

Our next series will review the nine military principles and examples of them from recently published games.



the defense again with the center unit (2004) moved to 1905. Now 1905 has 10 defense SPs, 2003 has 5 SP, and the Germans have 50 SPs and a 1R armor shift. The best Germans can achieve against 1905 is a 3-1 (40 SP + 1R armor) and a 2-1 against the single defender, or a 1-1 against the pair and a 4-1 against the single defender. The latter provides for slightly better chances to eliminate Soviet units while the former provides a

slightly better chance to retreat both defenders. Either way, the defenders have the choice to retreat and avoid any unit losses; the decision to eliminate a unit to limit the advance would be based on the overall game position. The main Soviet strategy in *Leningrad* is one of trading space and units to keep the Germans out of Leningrad city hexes at the end of the game.



Example #6. The Soviet defenders are in hexes #1905, #2003, and #2004. The German player attacks from #1904 with three units totaling 20 strength points (SPs) against the Soviet defense of 5 for a 4-1. The defender has river and woods to shift 2L, but the attacker has an armor unit to shift it 1R, so 3-1. This column on the Leningrad CRT ensures the defender will take at least one loss and have to retreat. Having three attackers also ensures that at least one attacker will be able to advance after combat into hex #2004. This cuts off the retreat of the other two defenders and adds a 2R shift to the attacks on them ensuring their elimination.

LENINGRAD

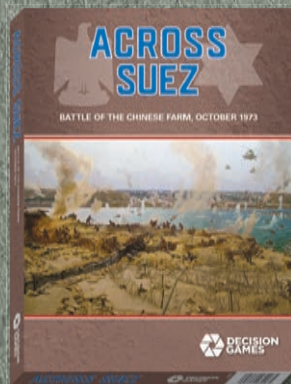


Leningrad recreates one of the most crucial campaigns of World War II, the northern wing of Operation Barbarossa in which German forces drive along the Baltic coast to take Leningrad and trap the Soviet fleet. The German military was at its operational peak: panzer divisions provided the striking power, the sturdy infantry divisions followed behind to hold the line and secure conquered territory, while overhead the *Luftwaffe* provided combat support and attacked marching enemy columns. Division-for-division the Soviets were outclassed, but they had plenty of ground to give to gain time for their massive reserves to reach the front. Historically the Soviets just managed to keep the Germans out of Leningrad, but it might easily have turned out differently.

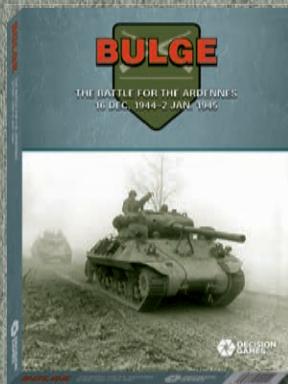
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Is the Marine Corps abandoning maneuver warfare?

by Marinus

The Maneuverist Papers have attempted to promote a conversation about Marine Corps doctrine. In so doing, they have always taken as their point of departure *MCDP 1, Warfighting*, which has stood essentially unchanged since the original version appeared in 1989. There have been two main objectives. First, to help today's Marines understand the genesis of maneuver warfare doctrine on the premise that to understand where you are and where you are going, you should understand where you have been. Second, to encourage a discussion on whether a doctrine that was promulgated over 30 years ago, in a very different time, continues to serve the needs of the Marine Corps of the present and future. The elephant in the room (or perhaps dragon is a better metaphor) regarding this question is Expeditionary Advanced Base Operations (EABO), the new operating concept that underlies the most significant structural changes the Marine Corps has seen since after the Vietnam War. The authoritative source on EABO is the *Tentative Manual for Expeditionary Advanced Base Operations (TMEABO)*,¹ according to which "EABO are a form of expeditionary warfare that involves the employment of mobile,

low-signature, persistent, and relatively easy to maintain and sustain naval expeditionary forces from a series of austere, temporary locations ashore or inshore within a contested maritime area in order to conduct sea denial, support sea control, or enable fleet sustainment."² Another key document is *Force Design 2030*, which describes the future Marine Corps intended to execute that concept.

First, we should establish that a new operating concept—generally speaking—is not obligated to comply with existing doctrine. Presuming that the operating concept is a response to a real-world operational requirement, it is doctrine that should comply with the concept. One caveat, however, is that if maneuver warfare is a direct response to the fundamental nature of war, as the Maneuverist Papers have argued, then we should make certain that where EABO contradicts maneuver warfare it is not also contradicting the nature of war. (Many recent joint and Service operating concepts, such as Effects-Based Operations, have been inconsistent with the reality of war.) The key question is this: If EABO is going to be the future of the Marine Corps, does our warfighting doctrine need to change to support EABO?

EABO are a form of expeditionary warfare employing small, mobile Marine units operating from temporary positions to conduct sea denial and associated missions. (Photo by PFC Sarah Pysher.)

While the *Tentative Manual* contains no explicit attacks upon the philosophy expressed in *MCDP 1*, the methods it proposes are based on assumptions about the nature of war that contravene the tenets of maneuver warfare. Moreover, the EABO concept in execution has little use for maneuver warfare, and we foresee the warfighting philosophy disappearing in relatively short order as a result—in practice if not in doctrine.

The Strategic Context

To understand EABO, it is necessary to understand the strategic context that begat it. EABO was conceived within the context of an Island Chain Strategy in a war in the Pacific with the People's Republic of China (PRC). The Island Chain Strategy was first proposed during the Cold War as a plan for containing the Soviet Union and PRC through a series of naval bases in the western Pacific from which to project U.S. naval power and deny sea access to the Soviets and Chinese.

In the context of a war with the PRC, it would involve the employment of long-range precision fires from positions along one or more chains of islands to prevent Chinese forces from breaking out of the East or South China Seas. The Island Chain Strategy is an attritional, cost-imposition strategy: the idea is to make projecting power through a line of anti-access capabilities prohibitively expensive for China. Most significant is the First Island Chain, which runs from the Kamchatka Peninsula in the north through the Kuril Islands, Japan, the Ryukus, Taiwan, and the northern Philippines to Borneo in the south (sometimes including southern Vietnam as its southern anchor). The most important of these is Taiwan, the possession of which is recognized as a major policy objective of the PRC. The Second Island Chain runs from Japan through the Bonin Islands, Volcano Islands, Marianas, and Caroline Islands to Western New Guinea.

Perhaps the most concise summary of the logic of the Island Chain Strategy is this:

The idea has an appealing logic: turn the anti-access/area denial (A2/AD) equation back against China. By transforming islands into “porcupines,” DoD aims to develop layers of constraint against Chinese maritime growth. This strategy is both economical and resilient, at least in theory. Rather than matching China ship-for-ship and risk losing forces to the PRC's A2/AD capabilities, the archipelagic defense tries to put the United States and its allies on the right side of a cost imposition strategy. Pairing radars with shore-based, mobile anti-ship missiles could make a lethal but affordable combination. Moreover, there is no lack of islands in the western Pacific, so this offers the chance for “defense in depth.” The U.S. armed services have embraced the strategy with gusto. The Marines and Army, in particular, have been working on establishing their relevance in the Indo-Pacific.³

While the strategy has its supporters, we argue it is problematic.⁴

As a theater strategy, the Island Chain Strategy has a certain Maginot Line quality to it. One thing we know about Maginot Lines is that they encourage enemies to go to lengths

to find ways around them. The example of the Cold War is instructive. The main conflict was always expected to be in central Europe, and the U.S. Army committed multiple corps to that theater for nearly a half-century. That massive conflict never occurred, fortunately, but plenty of other conflicts (and other crises) flared up around the periphery, and the Marine Corps, as the Nation's force-in-readiness, was heavily engaged in most of them.

As what happened in Europe during the Cold War, implementing the strategy may involve committing combat forces to the region for years or decades, as China seems inclined to play a long game, patiently waiting until it has shaped the conditions that guarantee victory. As Sunzi, the forefather of Chinese strategic thought, wrote:

Anciently those called skilled in war conquered an enemy easily conquered. And therefore the victories by a master of war gain him neither reputation for wisdom nor merit for valor. For he wins his victories without erring. “Without erring” means that whatever he does insures his victory; he conquers an enemy already defeated. Therefore the skilled commander takes up a position in which he cannot be defeated and misses no opportunity to master his enemy. Thus a victorious army wins its victories before seeking battle; an army destined to defeat fights in the hope of winning.⁵

Implementing the strategy will require that the EABs be in position before the onset of hostilities. According to the TMEABO: “*Rather than a force designed to fight its way into a contested area, the Marine Corps is building a force capable of persisting and operating forward as a critical component of a naval campaign.*”⁶ (Are we to infer that the Marine Corps is abandoning a forcible-entry capability?) By the logic of the concept, if U.S. forces must fight their way through the Chinese anti-access envelope merely to get into position, then the cost-imposition calculus is reversed. Further, moving forces into position before hostilities in sufficient strength to cause the PRC to feel penned in may trigger just the conflict it is intended to deter, especially if China sees force ratios with respect to the capture of Taiwan trending in the wrong direction.

There also would be significant political hurdles to implementing such a strategy. Host nations would have to authorize the positioning of U.S. forces on their territory indefinitely. Whereas the defense of Europe against the Soviet Union was undertaken by a strong and unified alliance, that condition does not exist in the western Pacific. The United States would need to make arrangements with individual states for pre-conflict basing, and these would be difficult to arrange. For example, Taiwan would be an attractive location for basing, but any U.S. deployment there would trigger a ferocious Chinese response since the Chinese Communist Party considers Taiwan to be Chinese national territory. The Philippines would also be attractive because of its many islands near the South China Sea, but the Philippine government has been leery of U.S. connections, its military is weak, and the country is extremely vulnerable to Chinese pressure. Vietnam might be willing to host U.S. forces, but it too has tried to remain neutral, recognizing the immense power of

its northern neighbor. Japan has treaty connections to the United States and many U.S. bases but might not be willing to get involved in a conflict that did not directly attack Japanese territory. The Australians have allowed U.S. basing, but the country is distant from the likely venues of conflict.

Any state that allowed U.S. bases would come under continuous, intense economic pressure from China, in the form of both coercion and inducements, to deny U.S. basing rights. China has shown itself to be ruthless in this regard when it considers its interests to be opposed. (Just ask the Lithuanians, who recently lost access to the Chinese market for calling the Taiwanese embassy “Taiwanese” or the National Basketball Association, for that matter, which has repeatedly kowtowed to the Chinese Communist Party to keep access to that market.) Maintaining the system of basing sites, even if successfully established, would thus be an ongoing diplomatic challenge. In the event of conflict, the United States could never be sure that host countries would be willing to risk the immense dangers of confronting China.

A war with China in the western Pacific cannot be considered in isolation. There is the question of how an Island Chain Strategy comports with other strategic imperatives in the region or around the globe. For example, the Democratic People’s Republic of Korea almost certainly would use a war between the United States and China as an excuse to invade its neighbor to the south. How does establishing a defensive line along the First Island Chain fit with the requirement to flow reinforcements to the Korean Peninsula in such as event?

All this effort might end up being focused on the wrong location. China is without question the greatest threat to U.S. national security interests, and a conventional, high-intensity conflict with China in the Pacific is a possibility—although not a likelihood. However, lesser conflict elsewhere around the globe is a certainty—whether sponsored by China, Russia, Iran, or somebody else. In a highly insightful and intriguingly titled article, “Insurgency, Not War, Is China’s Most Likely Course of Action,” John Vrolyk writes:

Competing with China might include a great-power war in the Western Pacific—but it’s almost certainly going to consist of fighting proxy wars and insurgencies around the globe where American and Chinese interests clash. ... A great-power conflict today would involve high-intensity combat that would make World War II pale in comparison. Great-power competition, on the other hand, is likely to involve a new era of messy global entanglements, ranging from economic rivalry to intelligence operations to full-on proxy warfare and insurgency campaigns focused on the world’s most critical lines of communication.⁷

The most rational way for China to pursue its aim of displacing the United States as the dominant power in the region, according to Vrolyk, is to “rely more on bullying, proxies, and insurgencies than on hypersonic or nuclear interchange.”⁸

Even acknowledging the potential deterrent value of the Island Chain Strategy, this is far from the best employment of Marine Corps forces. The Army is much better prepared and equipped to provide the landbased missile forces that are the backbone of the concept. If the Marine Corps were so committed, who then would fulfill the force-in-readiness

role? Is it in the Nation’s interest to tie up limited Marine forces—built for rapid deployability to “any clime and place” and warfare across the spectrum of conflict—indefinitely in anticipation of a war that may not occur?

Some may argue that the Marine Corps today is merely doing what the interwar Marine Corps did in developing amphibious capabilities based on War Plan Orange. The critical difference, however, is that those amphibious capabilities found utility in nearly every theater of the Second World War and in numerous instances since, while EABO appears to be applicable to one very specific feature of maritime terrain in the western Pacific.

Part of the motivation behind this concept likely is the understandable desire to return the Marine Corps to its naval roots after two decades of employment essentially as a second land army. However, there are other ways to do this without tying the Marine Corps down to a narrow mission within a single theater. No doubt, some of the motivation is the desire to be part of the main fight rather than a sideshow, but Marines should remember that during the Cold War they maintained a global posture as a force-in-readiness and were not focused specifically on the central front in Europe (although they did maintain capabilities that were relevant to that theater). This approach was successful. The Nation and the defense establishment recognized that the United States had global responsibilities it could not walk away from.

The Operational Context

The operational context of EABO is a maritime campaign for sea control/sea denial by means of an integrated network of sensors and shooters designed to detect and engage advancing Chinese naval forces with long-range precision fires. EABs would serve as essentially inanimate nodes within that network, operating from supposedly survivable positions inside the enemy’s weapons engagement zone to attack the enemy’s anti-access capabilities from the inside out. As operating concepts go, this one fits squarely in the methodical battle/attrition warfare school of thought.

The TMEABO identifies several missions and tasks for EABs, including air and missile defense, forward sustainment, forward command and control, and forward arming and refueling point operations.⁹ But clearly, the preeminent mission of EABs—and the one resulting in the most dramatic changes in structure—is expected to be engaging enemy ships with missiles from shorebased batteries or unmanned surface vessels launched from the EAB. The EABs will serve essentially as firebases launching anti-ship missiles at distant targets. A networked sensor system will detect the targets, and a networked naval commander will make the engagement decisions. The EAB will be just another set of launchers in the network, augmenting the much greater number of launch cells aboard Navy ships and on Air Force, Navy, and Marine Corps aircraft.

Although the new concept might brief well, it has several major deficiencies. The first problem is fundamental. This is warfare reduced to dueling kill webs, warfare as a giant Lanchester equation, which we hardly need point out is attri-

tion warfare in pure mathematical form.¹⁰ (See Maneuverist No. 10, “Defeat Mechanisms,” *MCG*, Jul21.) It reflects a mindset not uncommon in the Navy and Air Force—which see war essentially as a clash of technologies—but fundamentally inconsistent with the nature of war as described in *MCDP 1, Warfighting*.

A second problem is a discounting of combined-arms maneuver. EABO is a firepower-based concept premised on defeating the enemy’s advance at a long distance. Under such a concept, tactical maneuver becomes irrelevant. (The EAB commander’s latitude for positioning and repositioning for security purposes hardly qualifies as maneuver.) But we know this to be unrealistic; history tells us that at some point enemy forces will penetrate the friendly anti-access barrier, and when they do, the outnumbered and isolated small Marine units will be fighting for survival without the benefit of cannon artillery or tank support.

Third, the security of the EABs will be problematic. EABs are expected to rely on remaining undetected through mobility, concealment, and low signature. According to the TMEABO, the bases will be small, austere, and temporary, based on the rationale that any prepared emplacement within the PLA’s weapons engagement zone will be detected and vulnerable to destruction. This logic is problematic. First, any emplacement that remains in place for any period of time will start to accumulate infrastructure. This was the case with firebases in Vietnam, which were originally intended to be temporary positions but over time became ever more elaborate, incrementally providing additional security, comfort, and functions. If the stand-in forces at the EAB are engaged in security cooperation activities prior to hostilities, as is envisioned, their presence will be well known to the local population. That population almost certainly will be infiltrated with human intelligence sources.

Fourth, logistic support likewise will be an issue. Every resupply mission or other logistics contact risks giving away the EAB’s position, which is why EABs are meant to be largely self-sustaining. Despite YouTube videos of TBS lieutenants being taught to slaughter and roast pigs, we understand that

local sustainment primarily means living off the local economy through greater operational contract support. Like security cooperation activities do, self-sustainment presents a major operations security risk. Interactions with the local population will expose the EAB to detection by human intelligence. EABs are likely to be pinpointed every bit as much as if they had been detected by high-technology sensors.

The Implications of Force Design 2030

In designing the force to implement the EABO concept, *Force Design 2030* calls for dramatic structural changes. The infantry battalion—the base ground maneuver unit, the moral heart and soul of the Marine Corps—will be reduced dramatically in both number and manpower strength. Marine Corps statements indicate that decision is driven by a desire to find budget savings rather than by any analysis of operational requirements. The number of active battalions will be reduced from 24 to 21. Only one of those will be permanently stationed in 3d MarDiv. The 1st MarDiv will have twelve infantry battalions, but six of those will be committed to Marine Littoral Regiment (MLR) and MEU rotations, leaving only six battalions for other commitments. The 2d MarDiv will have eight infantry battalions, but four of those will be committed to MLR and MEU rotations, leaving barely a regiment for other requirements.¹¹ (See Figure 1 below.)

The TMEABO insists that the Marine Corps will be able to make these drastic changes and still meet its statutory missions, but we are unconvinced.¹³ We question whether a Marine Corps with this decreased infantry structure can meet its global requirements. Unless the Marine Corps is being written out of war plans, the numbers do not seem to add up.

We understand that the exact organization of the infantry battalion is still under development, being the subject of ongoing experimentation, but per the TMEABO the infantry battalion will see a *one-third* reduction in manpower strength, from 965 to 648.¹⁴ This will dramatically impact the battalion’s resilience in the face of the casualties that can be expected in a war with a peer competitor.

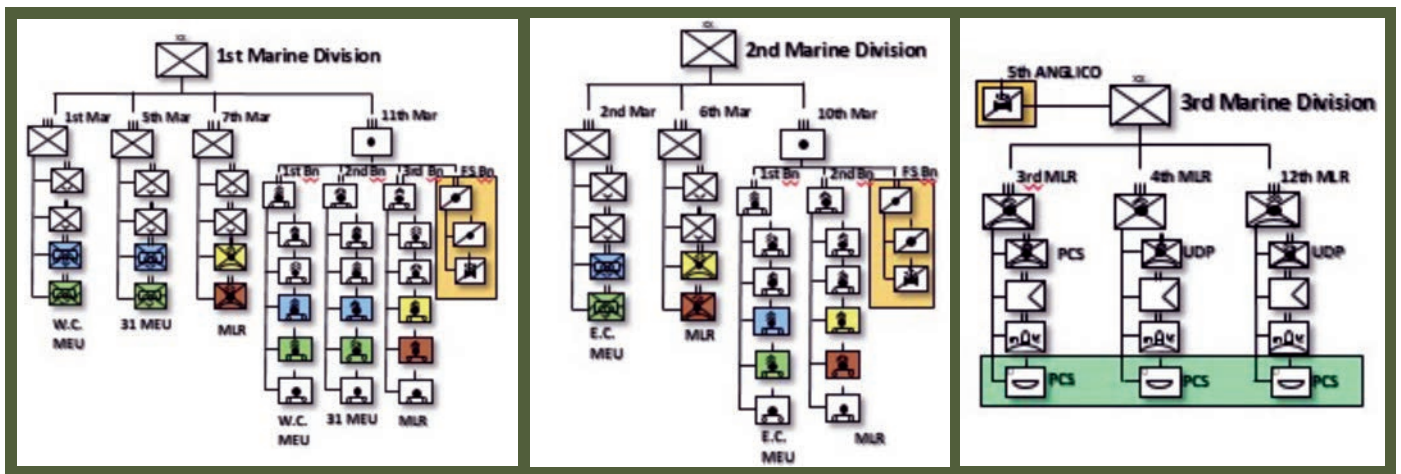


Figure 1.¹² (Figure provided by author.)

With the reduction in infantry battalions, the *Commandant's Planning Guidance* calls for roughly proportional cuts in aviation and other support.

Artillery will get smaller and undergo a transformation. According to the *Commandant's Planning Guidance*,

we remain woefully behind in the development of ground-based long-range precision-fires that can be fielded in the near term which have sufficient range and precision to deter malign activities or conflict. Our capability development focus has fixated on those capabilities with sufficient range and lethality to support infantry and ground maneuver. This singular focus is no longer appropriate or acceptable. Our ground-based fires must be relevant to the fleet and joint force commanders and provide overmatch against potential adversaries, or they risk irrelevance.¹⁵

In practical terms, this means a transition from cannon artillery to rockets and missiles. It is these units that are expected to perform the task of providing precision anti-ship fires in support of sea control/sea denial called for in the concept. Per the TMEABO, cannon artillery in the active forces will be reduced to five total batteries.¹⁶ Clearly, the Commandant's guidance signals a shift away from fires in support of ground maneuver, a task requiring massed and sustained area fires and one not suitable for precision rockets and missiles, some of which cost nearly \$2 million per round. With the reduction of cannon batteries, the ability to perform traditional fire support missions like suppression, marking, illumination, and obscuration fires will be nearly nonexistent.

Additionally, as practically every Marine now knows, tanks have been eliminated outright from the inventory.¹⁷ The elimination of tanks, the drastic reduction of cannon artillery, and the dramatic reduction in the number and size of infantry battalions unequivocally signal that the Marine Corps has little intention of being involved in high-intensity ground combat in the future. The infantry's mission of locating, closing with, and destroying the enemy clearly will be a thing of the past. Marine infantry will become little more than a security force for rocket/missile batteries and aviation and logistics assets. The debilitating impact on ethos and culture will be profound, even to the point of undermining the Corps' foundational belief in "every Marine a rifleman." It is ironic that one of the stated objectives of the reorganization is to transition away from two decades of counterinsurgency because, except for the MLRs optimized for a naval campaign in the western Pacific, the rest of the Marine Corps seems to be getting reduced to little more than constabulary forces incapable of high-intensity, combined arms combat.

Finally, the Marine Corps must consider the risk it is accepting by divesting itself of capabilities before new ones come online.¹⁸ Regardless of which missile the Marine Corps eventually buys, that capability will not become operational for several years. But the divestments are happening now—and in some cases have already happened. The Marine Corps of today is a less capable force than the Marine Corps of only two years ago—and it continues to shed capability—which of course undermines national security.

Mission Command

The concept of mission command merits special mention. As we have discussed, mission tactics (or mission command) are the defining feature of maneuver warfare (Maneuverist No. 12, "On Decentralization," *MCG*, Sep21). The *Tentative Manual* makes the necessary head nod to the concept:

The principles of maneuver warfare and mission command and control permeate all actions of littoral forces conducting EABO, from planning through execution. During planning, commanders aim to create conditions during execution that enable subordinates to operate guided by the essential elements of mission command and control: *low-level initiative, commonly understood commander's intent, mutual trust, and implicit understanding and communications*.¹⁹

The passage hits all the right notes, but as we read the manual, we have to wonder how much need there will be for mission command. How much latitude is there really for low-level initiative when the EAB will be little more than an inanimate firepower node in a massive kill web comprising myriad sensors and shooters linked together in a comprehensive digital network? The EAB commander's role will consist essentially of securing and sustaining his position on some littoral while the entire fight takes place over the horizon. There will be no

As we have discussed, mission tactics (or mission command) are the defining feature of maneuver warfare ...

maneuvering against the enemy or engaging in close combat—the historical strength of the Marine Corps—that is, unless the concept has utterly failed and it is time to fire the final protective fires (which, by the way, apparently will be limited to a small number of 81mm mortars). Movement generally will consist of local repositioning to avoid detection or counterbattery fire.

Moreover, there is an internal contradiction in espousing mission command within the context of a centralized network-centric approach. This problem is by no means unique to EABO. Practically every Service or joint operating concept of the last decade has paid lip service to mission command while making operations increasingly dependent on a comprehensive digital network. *Joint All-Domain Command and Control* is only the most recent, and perhaps most ambitious, effort. It is difficult to see how mission command will survive in such a command and control (C2) environment characterized by centralized situational awareness and detailed control through information technology. It is not practical to say that mission command will take over when the network goes down. (And does anyone believe that taking down the U.S. information network will not be a primary enemy objective in any war?) Mission command requires training and practice; it is not something that can simply be turned on when the network goes dark. A force that has trained and operated under tightly

controlled and highly centralized decision making becomes acculturated to that.

Conclusion

Returning to the question that began this paper: If EABO is going to be the future of the Marine Corps, does our war-fighting doctrine need to change to support EABO? Based on assumptions about the nature of war that run counter to *MCDP 1*, the EABO concept has little need for maneuver warfare. We believe that doctrine will change. We believe EABO would be better served by a doctrine based on technical and procedural proficiency and limited latitude in the performance of constrained tasks, but we also believe that is not what the Nation expects or needs from its Marine Corps.

History tells us that the track record for accurately predicting the next fight is very poor.²⁰ China is the pacing threat, without a doubt, but that is a far cry from concluding that the next war will be a high-tech fight with China in the western Pacific. Yet, with EABO and *Force Design 2030*, the Marine Corps seems to be going all-in on just that fight while hobbling the Corps' ability to perform other missions.

The Marine Corps has a history of fearing for its survival any time it comes out of a long period of war in which it has been employed indistinguishably from the Army. We have no doubt the Commandant believes he is protecting the Marine Corps by making it more relevant to the future security environment. The Commandant deserves, and has received, credit for making bold moves. Boldness is a tenet of maneuver warfare, but we fear that the TMEABO and *Force Design 2030* risk transforming the Marine Corps into a niche force optimized for one specific war that must be considered unlikely while rendering it ill-equipped to respond to the many types of crises and conflicts that history tells us are certain. By stripping the Marine Corps of the ability to carry out the crisis-response and combat missions the Nation has long expected of it, the Commandant instead may be consigning it to irrelevance—or worse. As *Warfighting* advises, “boldness must be tempered with judgment lest it border on recklessness.”²¹

Notes

1. Headquarters Marine Corps, *Tentative Manual for Expeditionary Advanced Base Operations (TMEABO)*, (Washington, DC: February 2021).

2. Ibid.

3. Lyle Goldstein, “Bad Idea: Turning A2/AD against China with ‘Archipelagic Defense,’” *Defense 360°*, (December 2021), available at <https://defense360.csis.org>. To be fair, Goldstein is no supporter of the concept. The very next paragraph begins: “However, archipelagic defense is a bad idea for political, economic, environmental, and military reasons.”

4. See, for example, Andrew F. Krepenovich, “How to Deter China: The Case for the Archipelagic Defense,” *Foreign Affairs*, (February 2015), available at <https://www.foreignaffairs.com>. See also Thomas G. Mahnken, “A Maritime Strategy to Deal with China,” *Proceedings*, (Annapolis, MD: U.S. Naval Institute Press, February 2022).

5. Sun Tzu, *The Art of War*, trans. by Samuel B. Griffith, (London: Oxford University Press, 1963).

6. *Tentative Manual for Expeditionary Advanced Base Operations*.

7. John Vrolyk, “Insurgency, Not War, Is China’s Most Likely Course of Action,” *War on the Rocks*, (December 2019), available at <https://warontherocks.com>.

8. Ibid.

9. *Tentative Manual for Expeditionary Advanced Base Operations*.

10. Lanchester’s Laws are a set of differential equations for calculating the strength of two battling military forces over time based on the relative rates of attrition between the two. They were first developed by English polymath and engineer Frederick Lanchester around the time of the First World War.

11. It is worth noting that these numbers are based on two-battalion rotations rather than three-battalion rotations, meaning six months on and six months off, which the Marine Corps has previously found unsustainable for MEU rotations. Switching to three-battalion rotations to ease the operational tempo would leave even fewer infantry battalions ready for immediate deployment.

12. *Tentative Manual for Expeditionary Advanced Base Operations*.

13. Ibid.

14. Since the mid-1980s, between the decrease in the number of infantry battalions from 27 to now 21 and the reduction in the size of those battalions, the number of Marines in infantry battalions has been cut essentially in half.

15. Gen David H. Berger, *38th Commandant’s Planning Guidance*, (Washington, DC: July 2019).

16. *Tentative Manual for Expeditionary Advanced Base Operations*.

17. And with the tanks also the necessary skills to rebuild the capability, as career Marine tankers unwilling to transition to other MOSs have been forced to transfer to the Army.

18. Not to mention the risk of never seeing the savings of those divestitures recouped in other capabilities gained.

19. *Tentative Manual for Expeditionary Advanced Base Operations*.

20. See, for example, Lawrence Freedman, *The Future of War: A History*, (New York, NY: Public Affairs, 2017).

21. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: 1997).





The Meager Corps

by MSgt Jennifer E. Holt

The Marine Corps is fiscally irresponsible, which is interesting because Marine leaders often bemoan the abysmal financial decisions of junior Marines. Yet, the Marine Corps sets a poor example. Instead of cutting frivolous spending, canceling old subscriptions, and balancing the checkbook, the Corps continues to live paycheck to paycheck. The Marine Corps cannot afford to modernize to be effective against future adversaries.

Of all the things the Marine Corps could spend money on, the Corps chooses new clothes. Marines live in substandard housing infested with black mold and work in World War II-era buildings full of asbestos. Why improve the living and working conditions of the Marine Corps' most valuable asset when the Corps can throw money away designing a new physical fitness uniform? Sorry, Marines' health and wellbeing are irrelevant, but the units will look fantastic conducting unit physical training (PT).

The Commandant has many force design initiatives currently in the process of implementation; however, designing a new PT uniform is a frivolous financial priority. The message to the junior Marines is, *"Don't budget to take care of your financial responsibilities, such as home and vehicle maintenance*

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bilities is like selling old furniture on Facebook Marketplace and using the proceeds to buy newer used furniture. Yet, the Marine Corps' credit card is being charged annually for old subscriptions no longer used for non-working items stored in the attic. The millions of dollars the Marine Corps spends on antiquated, non-functional gear and associated services because the gear is established POR in an asinine pecuniary sense. In addition to the slow drain of the coin purse, the Marine Corps makes questionable investments in capabilities that exist in other Services.

The Corps' mantra of doing more with less is false. Financial constraints should inspire decision makers to evaluate the other Services' capabilities within the DOD and avoid implementing those same capabilities. It is redundant and fosters service isolation. The Marine Corps is not designed or staffed to operate in a bubble, nor can it afford to try to do so. The Corps needs to balance the checkbook by leveraging sister service expertise and facilities by increasing Marine Corps presence within joint commands and naval units while also implementing the Commandant's guidance on *Force Design 2030* by dismantling superfluous things such as Production Exploitation Dissemination cells. The Marine Corps wastes money trying to keep up with the Joneses. The Corps can save money by outsourcing capabilities and reallocating more Marines into those joint units to support Marine Corps missions.

The Marine Corps was a unique fighting force. The Corps traded the uniqueness for redundant capabilities and a new PT uniform similar to all of the other Services. The Marine Corps must cut frivolous spending on ridiculous requirements, cancel old subscriptions to antiquated POR gear and services, and outsource products and services from other DOD entities in order to be effective against our adversaries or remain the meager Corps.

The Corps should save the money spent on contracting and designing a PT uniform and use it to improve facilities across the Marine Corps.

or your family, but go out and get the latest pair of Air Jordan shoes." The Corps should save the money spent on contracting and designing a PT uniform and use it to improve facilities across the Marine Corps.

Additionally, the Marine Corps' fiscal fecklessness is embedded in the ancient or innumerable bogus requirements submitted to Systems Command and promulgated throughout the fleet as established Program of Record (POR) gear. The Commandant launched bold changes, taking risk in order to force forward the progression of the institution. The divestment of entire units, gear disbursed to other Services or demolished, and manning reallocated across the Corps for the purpose of finding sufficient funds to invest in future capa-



Mars Learning

reviewed by Maj Daniel Hough

The past twenty years saw the heavy involvement of the Marine Corps in counter-insurgency (COIN) operations, or what many have called “small wars.” These two decades of COIN proved again how complicated, messy, and expensive small wars are. After everything devoted to COIN—even re-writing the joint doctrine for COIN—the end result is largely failure. Since the need for COIN may once again rear its ugly head, the lessons from the Marine Corps’ small wars experience in the early twentieth century may help shed important light on how the Marine Corps, and the U.S. military writ large, should deal with its recent COIN struggles. In his book, *Mars Learning*, Keith Bickel revived interest in the Marine Corps’ *Small Wars Manual* just before the need for it exploded on the scene. His book is not a comprehensive history of the Marine Corps’ involvement in Haiti, the Dominican Republic, and Nicaragua. Instead, it urges military professionals to explore the process of doctrinal development and institutional learning that the Corps underwent. Marines would be wise to incorporate his findings as they refine and preserve institutional knowledge from the hard lessons of the past twenty years of COIN.

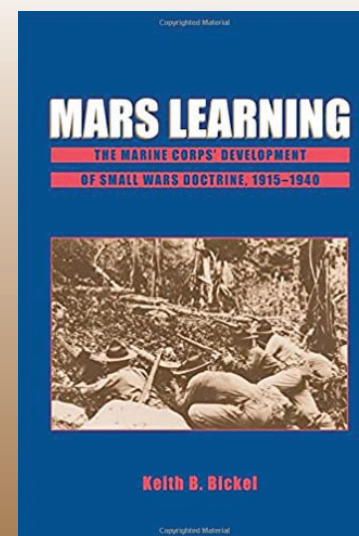
At the heart of *Mars Learning*, Bickel helps his readers examine the differences and challenges posed by informal and formal doctrine, revealed in the evolution of Marine Corps doctrine eventually manifested in the *Small Wars Manual*. When the Marine Corps commenced the Haiti mission in 1915, it lacked the formal doctrine for how to fight and win a small war. Absent this institutional

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structure, the Marines relied on doctrinal resources from other Services but especially turned to informal doctrine as an unofficial means of advancing an institutional vision for prosecuting a small war. Informal doctrine’s preeminent role in spreading knowledge gleaned from operations, beginning with experiences in the Philippines alongside the Army and concluding with the campaign in

... Bickel helps his readers examine the differences and challenges posed by informal and formal doctrine ...

Nicaragua, set the stage for a “great man” to swoop in and control doctrinal development. Quite the opposite occurred in the case of the *Small Wars Manual*, however. Visionary mid-level Marine officers with experience overcame an institutional focus on amphibious warfare, exploiting their key positions within the institution to produce a coherent doctrine that ac-



MARS LEARNING: The Marine Corps’ Development of Small Wars Doctrine, 1915–1940.
By Keith Bickel. Boulder, CO: Westview Press, 2001.
ISBN: 978-0813397757, 214 pp.

curately reflected lessons learned from these Caribbean campaigns.

Mars Learning is limited as a detailed history of the Marine Corps’ campaigns in Haiti, the Dominican Republic, and Nicaragua. A significant body of work exists that explores the brutality of these three campaigns and the alleged atrocities committed by Marines, but this book barely acknowledges that it occurred. Its value lies in its thorough exploration of the doctrinal development process that the Corps conducted as Marines learned, and sadly often re-learned, how to conduct COIN operations. Marine officers today should take to heart the model Bickel presents of how to work within the institution, even when the Marine Corps is focused elsewhere, to capture the lessons from recent COIN failures and preserve them for the betterment of the Marine Corps as an institution.



Mars Learning

reviewed by Maj Tyler Quinn

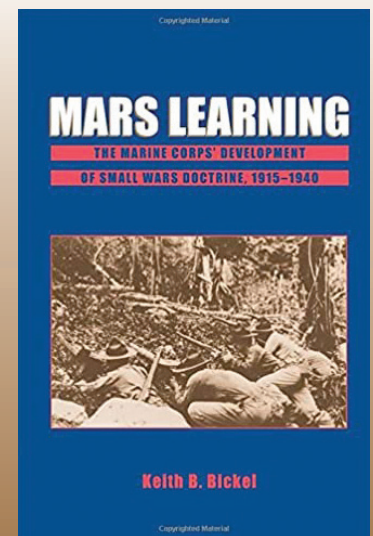
American comedian Steven Wright said, “I’m having amnesia and déjà vu at the same time. I think I’ve forgotten this before.”¹ America is focused on large-scale conflict to the point that we failed the closure of our longest small war in Afghanistan. We have forgotten. Marines spent two decades conducting small wars in the Caribbean and South America while the senior echelons in the Marine Corps and Navy diligently developed future concepts centered on more conventional amphibious operations. The ensuing debate over which mission would reign supreme could have torn the Corps apart. However, the Marine Corps allowed divergent ideas to germinate and produced sound doctrine for both. Keith Bickel’s treatise on the Marines Corps’ divergent processes provides a model for successful learning organizations and is especially useful for mid-grade professionals trying to create change.

In *Mars Learning*, we see the inner workings of doctrinal development based on recent experience and a strong desire of mid-level champions to codify and pass on their lessons. Bickel, a career military and business strategist with a PhD from Johns Hopkins School of Advanced International Studies, writes a thorough and compelling case for how the Marine Corps learned during the interwar period. He focuses on the development of the Marines’ *Small Wars Manual* as the fruit of their experiences in Haiti, Dominican Republic, and Nicaragua from 1915–1940. The Marines did not require external pressure, and there was no radical technology change that forced them to learn. Bickel correctly

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notes the professional writing and collaboration of experienced experts as the driving force. He highlights the intellectual freedom allowed and rightly dismisses any great-man theories that would suggest a singular genius as the sole catalyst.

Mars Learning is more than an examination of small wars and the development of doctrine. The historical case studies serve as a laboratory for Bickel to display the Marines’ ability to blend their own experience with the Army’s to fill a potential future gap in knowledge. Bickel buries the lead a bit by discussing organizational learning in his conclusions, and the level of detail in operations and tactics could be distracting for some. However, the organization of the book and reliance on first sources provides strong evidence for his argument. His comparison of school curriculum and the development of the *Tentative Manual for Landing Operations* illuminate the value of divergent thought. The small team of professionals hedged against what they saw as a more frequent and inevitable occurrence by writing the *Small Wars Manual*. This raises an interesting question. Would the *Tentative Landing Manual* have been



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written if it did not have something to push against? Perhaps the *Small Wars Manual* served as steel to sharpen steel, and both schools of thought benefited from the intellectual competition.

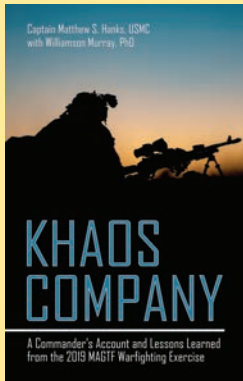
Today, we are in a similar predicament of losing combat experience and knowledge of a more common type of warfare, so called small wars, as we race toward future concepts. What lessons from two decades in Iraq and Afghanistan can we ill afford to lose in a future war? The Marine Corps can continue its learning legacy if it has the same intellectual courage to foster divergent efforts to serve as surety against an unknowable future while experimenting with emerging ideas. Naval officers, Marines especially, would benefit from deep study of a history that echoes the modern day.

Note

1. Steven Wright quote available at <https://www.brainyquote.com>.



For Further Reading



KHAOS COMPANY: A Commander's Account and Lessons Learned From the 2019 MAGTF Warfighting Exercise. By Capt Matthew S. Hanks with Williamson Murray, PhD Quantico, VA: Marine Corps University Press, 2021. ISBN: 9781732003170, 263, pp.

reviewed by Maj Skip Crawley, USMCR (Ret)

Khaos Company: A Commander's Account and Lessons Learned from the 2019 MAGTF Warfighting Exercise by Capt Matthew S. Hanks with Williamson Murray, PhD, is ostensibly an account of the participation of Kilo Company, 3/8 Mar in MAGTF Warfighting Exercise (MWX) 1-20 at the Marine Corps Air Ground Combat Center Twentynine Palms, CA, from the viewpoint of the commanding officer. In fact, it is much more. *Khaos Company* serves as an excellent tutorial on rifle company combat in today's operating environment against "an asymmetric and peer adversary threat under modern battlefield conditions."

In *Khaos Company*, Capt Hanks does an outstanding job of describing, through the experience of leading his company through MWX 20-1, some of the dynamics of combat on today's battlefield. For example, task organization is inherent in the nature of the Marine Corps, but most Marines are comfortable with—and used to—task organization staying constant during battles. However, in today's environment, Marines need to become comfortable with changing task organization "on the fly" during combat operations. During MWX 20-1, Capt Hanks was directly under Regimental Combat Team 2 as the regimental reserve and then under the command of three different battalions: 1/2 Mar, 3/2 Mar, and 3/8 Mar—his parent battalion. In addition, Kilo Company was constantly attaching and detaching units/assets as the company's mission changed. His account shows that the fog of war is just as much a reality today as its ever been. At the beginning of MWX 20-1, Capt Hanks was given 72 hours to establish a deliberate defense. However, because the AAVs tasked with transporting Kilo Company to the defensive position arrived *two days late*, Capt Hanks faced the challenge of "establishing a hasty defense with less than 24 hours" preparation. Expect friction to be a constant.

Another real benefit of *Khaos Company* lies in its illustration of the importance of culture in a combat unit and how to develop it. Capt Hanks generated and fostered a company culture in which the Marine Corps' maneuver warfare philosophy thrived. Capt Hanks empowered his subordinate unit leaders and instilled in them a sense that they were the gatekeepers of the "legacy of the company and the Service." Capt Hanks' statement, "The spirit of the Marine Corps, harnessed through [unit] culture, will take care of everything else" is the essence of what he developed in *Khaos Company*.

I have one criticism. In *Khaos Company*, Capt Hanks has an idealized view of human nature. Capt Hanks' pride in the Marines of his company is understandable, but it is completely unrealistic to paint a picture that basically every Marine he worked within MWX 20-1 shared his commitment to mission accomplishment. The reality of human nature is that even in a professional organization such as the Marine Corps, there will always be different levels of competence, different levels of attention to duty, different levels of professionalism, and personality conflicts. That is the reality of human nature.

Capt Hanks' *Khaos Company* is highly recommended for all ground combat company-grade officers and anyone else who wants a company-level tutorial on what company-level combat may be like in the near future and how to develop the right unit culture to excel in combat.

>Maj Crawley is a former Infantry Officer who served during DESERT SHIELD/DESERT STORM. He is currently the Central Region Network Coordinator for the Marine for Life Program based in Dallas-Ft Worth.

Quote to Ponder:

"A force engaged is out of the hand of its commander."

—Col Charles Ardent du Picq, *Battle Studies*, 1880, tr Greely, 1957

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The Board of Governors of the Marine Corps Association has given the authority to approve manuscripts for publication to the editor and the Editorial Advisory Panel. Editorial Advisory Panel members are listed on the *Gazette's* masthead in each issue. The panel, which normally meets as required, represents a cross section of Marines by professional interest, experience, age, rank, and gender. The panel judges all writing contests. A simple majority rules in its decisions. Material submitted for publication is accepted or rejected based on the assessment of the editor. The *Gazette* welcomes material in the following categories:

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