The King of Battle Recaptures His Crown?

How the Commandant's vision impacts artillery operations

by Maj David Lipkin

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For all the people who thought the counterinsurgencies of the past two decades dethroned the King of Battle, the King ostensibly recaptures his crown with the publishing of the *38th Commandant's Planning Guidance* (*CPG*) and further enhanced by concepts like *Expeditionary Advanced Based Operations*. These documents highlighted the importance that fires will play in the future operating environment and great power competition, using long-range rockets vice traditional cannon artillery. The vision of a HIMARS battery operating alone and unafraid in an expeditionary advanced base in support of fleet or maritime objectives is every artillery Marine's dream and seemingly what those documents espouse. However, a closer examination of the future operating environment reveals that the current state of Marine artillery is not prepared for these operations, nor is the artillery community moving in that direction. Our current process of active approval at the lowest echelon will not work in a large, maritime environment that requires real-time decision-making across the entire area of operations.

The 38th Commandant of the Marine Corps' bold transformation moves the Marine Corps' force development away from the myriad definitions of the force over the past three decades: sustained operations ashore, a light/middleweight force, a counterinsurgency force, a humanitarian assistance/disaster relief force, or an amphibious assault force. Gen Berger seeks to focus and alter the way Marines support naval campaigns. Many read the *CPG* believing naval integration meant conducting more MEU–type operations or revitalizing the amphibious assault of a bygone era. However, the *CPG* explicitly states, "we will no longer use a '2.0 MEB requirement' as the foundation for our arguments."[1] If the MEU mission set of today and large amphibious assaults are not the focus going forward, the artillery community must deduce the operating environment envisaged and devise a plan to remain relevant.

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There are volumes of articles, reports, commissions, studies, and concepts that all conclude the same idea former Chairman of the Joint Chiefs of Staff first articulated in June 2017: "The competitive advantage that the United States military has long enjoyed is eroding."[2] Marine artillery can no longer continue to operate in the same fashion that has worked for the last seven decades and expect to win. The principal threat that is eroding our advantage is what Andrew Krepinevich dubbed the "mature precision strike regime."[3] Krepinevich defines the mature precision strike regime by a ubiquity of sensors coupled to long-range precision fires. In simple terms, the adversary will quickly locate and destroy large signature military targets. The adversary's ability to locate and target friendly forces is the driving factor behind the Marine Corps'—and the joint forces'—need to disperse into small formations but achieve mass through our fires. This is how Marine artillery gained primacy.

This new character of war has changed the entire strategic landscape. This new character implies fires no longer support ground infantry maneuver; conversely, we must now maneuver to fire. As everyone shouts heresy, two points to present. First, fires will still support maneuver, but it will now be the fleet maneuvering in the maritime environment. Secondly, this is not the first time the two have swapped. The Medieval Wars of the Crusades and the Hundred Years War used sieges to con-

quer their enemies; they maneuvered to best position their artillery to win. As capital cities no longer have the same value in warfare as they did for Napoleon or Eisenhower, we must defeat the enemy's system. As *MCDP-1* says, we must "*penetrate* the enemy system and tear it apart."[4] The modern adversary's primary system to impose its will is precision strike. Therefore, the adversaries no longer want to maneuver over land to gain a position of advantage; the adversary seeks an advantage in its ability to decide, detect, deliver, and assess fires from very long ranges.

Despite the need to raise the importance of fires within modern warfare, our current approach still does not work because it lacks speed of decision making. The buzzword bingo of modern warfare includes hypersonic weapons, artificial intelligence (AI), quantum computing, 5th generation communications technology (5G), and on, which impacts the targeting cycle by forcing more rapid decisions.

The Marine Corps' current targeting cycle of 96 hours will not work in an environment Krepinevich defines in with the mature precision-strike regime. If we can see an adversary's weapon system, they are also counter-surveilling our sensor. If we attempt to develop a target package over 96 hours to align a shooter to the target, the target we wanted to strike will be gone and the adversary will destroy the sensor that was tracking it. The modern commander has recognized this problem, explaining why long endurance, armed unmanned aerial systems (UAS) have moved to center stage. Armed UAS possesses the ability for long loiter time to maintain constant surveillance without then having to resort to a separate shooter. However, we cannot build enough UAS with full motion video as their primary sensors to cover effectively an area of operations the size of the Indo-Pacific.

In a reactive targeting cycle, the current norm is three minutes or less at each fire support coordination center and six minutes for every fire direction center (for rocket artillery). This assumes a battalion's fire support coordination center can control most fires. However, today's maneuver battalions are only responsible for about 30 kilometers, whereas the modern battlefield will encompass sensors and shooters hundreds of miles apart. Therefore, using the best-case scenario in the current construct, the sensor will send target location data to the battalion to process (three minutes). The battalion will need to send to a regiment for further coordination (six minutes), then to the division and MEF (twelve minutes). The MEF must deconflict and coordinate with the fleet in the Maritime Operation Center (fifteen minutes) before the targeting data begins to travel down the fire direction command. This also assumes an instantaneous coordination with the Combined/Joint Air Operations Center, which is hardly the case. At the 15-minute mark, the MEF and division receive notification simultaneously to process the target, so they send it to the artillery regiment (21 minute), to the battalion (27 minutes) before sending it to the battery or platoon operations center (27 minutes). Therefore, in a perfect scenario, it takes nearly 30 minutes to process every mission of that scope, and that assumes no command has any competing priorities to distract and prolong the mission.

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To provide timely fires and remain relevant in the modern operating environment, Marine artillery should embrace concepts like Mosaic Warfare and Joint All-Domain Command and Control (JADC2).

The Defense Advanced Research Projects Agency defines Mosaic Warfare as flooding the battlefield with interconnected sensors and weapons systems. This allows friendly forces the freedom to choose how to most appropriately engage and respond to adversary actions. Two crucial elements to the success of Mosaic Warfare are how the nodes are connected and how the data from the nodes are processed.[5] JADC2 is still evolving, but at its core, it is the ability to connect all aspects of the joint force into an interwoven network. For example, a Marine operating as a reconnaissance element can identify a target, then simply and efficiently communicate that data to a shooter from any Service.[6]

The current approach to how we connect the nodes is by attempting to increase the bandwidth across long-range (mostly satellite-based) systems. The problem with this approach is there is a limit to how much bandwidth we can ever push while there is not really a limit to how much data we can transfer. Additionally, the adversary will target satellite and space-based systems from the onset, further diminishing their capabilities. This means we need to become more selective in the data we transfer and attempt to mask our data with civilian systems. One approach to this problem is through satellite or space-based 5G cellular receivers. Although they are still space-based, if we can create a dual-use satellite constellation of 5G towers/receivers, we can mask information flow from the adversary marking it as inherently military. The other element we need to address is how much information modern systems transmit. Most cellphones transmit location data to some other remote server to enhance its capability. If the Marine Corps can use sensor platforms like more sophisticated versions of cellphone location services, then we can more rapidly transmit important data. We could create a simple blue force tracker through cellphone-like location servers that we encrypt for military use, but the signal appears like every other cellphone.[7] We no longer need a centralized system to compute all the variables and inputs, as each system possesses the sufficient computing power to calculate all the data onboard, and then transmits only the necessary bits of data.[8]

The other issue we must address is combing through the mountains of data all the location services provide. Although many now argue that information is a manageable human task, this is thinking the future will be like

today. Today, a fire support coordination center may have a few sensors available to them—a recon element, a forward observer, an UAS—but that is not the same as the future. We are already seeing this problem play out in the information environment. As we develop training scenarios that incorporate the information environment, commanders and staff are unable to identify and process all the possible inputs when it comes to understanding and effectively operating in the information environment. For this, the reasonable answer is AI. This becomes a standard algorithm where a sensor identifies a target and then transmits the data to the appropriate level headquarters with pre-selected options the commander can choose for prosecuting the target. This idea is comparable to the one Christian Brose lays out in his book, titled *The Kill Chain*.[9] The algorithm already exists that we most of us are already comfortable with. This is nothing more than using Uber or Lyft. The sensor sends out the notification, "I am here." The algorithm then calculates all the available shooters and coordination necessary for the best possible solutions to the problem. Simplifying the process also eliminates the need for specialized training to certify joint tactical air controllers and joint fire observers. This will transform the 30-plus minute process for reactive targeting into a few minutes for the commander to select which option he wants to use.

The battery position will also look different. As automation continues to run more processes, we must let it manage fire direction and firing. We have the technical ability to do this today, but we refuse to trust the software. The current program of record for calculating firing data, Advanced Field Artillery Tactical Data System, can calculate and transmit all the data from a sensor to a shooter without any human intervention except if coordination is required. However, we do not use the functionality of the system because we know Advanced Field Artillery Tactical Data System does not have all the necessary data inputs (missing unit locations, lack of integration with other software programs, blue force tracking, etc.) and consequently use it as an expensive and complex calculator. With the technologies currently available and new technologies in development, the weapon systems will be able to calculate all the information and transmit only the necessary information.

One of the systems the Marine Corps is currently testing that will negate the need for human fire direction and firing of the system is ROGUE Fires, which essentially turns a HIMARS launcher into an unmanned system. As we unman the launcher, we can also automate the fire direction center with the application of AI. Therefore, the battery position is no longer populated by over a hundred Marines firing the weapon system. Now all we need to fill the position are a few dozen Marines to secure the weapon systems, additively manufacture new parts, and a few leaders. These need not be different people, as the skills will become ordinary and routine; a basically trained Marine can accomplish all the tasks. Lightening the footprint also eases the burden of supplying a remote and disparate location. Positions with less Marines are also inherently safer. As the adversary looks to eliminate our strengths (long-range fires), they must choose whether to use one of their long-range missiles against a target that only has the potential to inflict few casualties.

Yes, these ideas amount to a death knell for the artillery community as we know it today. The operating environment will elevate the significance of indirect fire but not the way we have employed and operated artillery systems for the past 100 years. First, we must acknowledge that no weapon system escapes the toll of time. As the archers and the cavalry gave way to artillery and armor, now too we must make way for the next system and method of employment. Secondly, it is far better to eliminate our jobs if it we can effectively automate it and remove more Marines from danger. Automating the battlefield is commonplace in some areas, like with Explosive Ordnance Detection's bomb robots or UAS, but we have been far too slow to adapt the ideas to let a computer takes a Marine's place.

As *Force Design 2030* identifies, the Marine Corps and the artillery community must start moving otherwise we will be overcome by events. Now is the time for the artillery subject matter experts and leaders to lay out the vision of future fires, lest we concede the initiative and let others decide for us.

Notes

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

2. U.S. Congress, *Hearing to Receive Testimony on the Department of Defense Budget Posture in Review of the Defense Authorization Request for Fiscal Year 2018 and the Future Years Defense Program, Before the Senate Armed Services Committee*, (Washington, DC: June 2017), available at https://www.armed-services.senate.gov.

3. Andrew F. Krepinevich, "Maritime Competition in a Mature Precision-Strike Regime," (Washington, DC: Center for Strategic Budgetary Assessments, 2015).

4. Headquarters Marine Corps, *MCDP 1, Warfighting,* (Washington, DC: 1997).

5. Staff, "DARPA Tiles Together a Vision of Mosaic Warfare," DARPA, (n.d.), available at https://www.darpa.mil.

6. Staff, "Giving Airmen the Edge: The Promise of JADC2," *Air Force Magazine*, (October 2020), available at https://www.airforcemag.com.

7. A modern approach to this encryption process is quantum encryption, which prevents breaking the encryption.

8. This idea is called edge computing in which every system will have the computing power of what was once seen as the sole domain of large supercomputers.

9. Christian Brose, *The Kill Chain*, (New York, NY: Hatchette Books, 2020).