

Multi-Domain Operations and Counter-Space

By Maj. Richard W. Gibson

We need to train a Space Mission Force. We need our space operators focused on what to do in case of a threat and to operate through the threat environment.

—Gen. John Hyten, April 2016

There is still much work needed in order for U.S. forces to not be hamstrung by the capabilities of peer and near-peer competitors. China over the last decade has become a peer adversary. Much of this change in status is due to its investment in emerging technologies, specifically huge strides in space launch and spacecraft capabilities. Of particular concern is emerging counter-space capabilities.

China has developed a counter-space strategy that involves creating a denied, degraded and disrupted space operations environment (D3SOE) against the U.S. government and military in future conflicts. China plans to employ its counter-space strategy through an Anti-Access/Area Denial environment (A2/AD) and the use of anti-satellite weapons (ASAT).

One U.S. development that may help mitigate A2/AD capabilities is the creation of the Multi-Domain Operations (MDO) concept and the Multi-Domain Task Force (MDTF).

Crux of the Problem

The Multi-Domain Operations concept began as a joint U.S. Army and Marine Corps white paper in October 2016. It specifies that the crux of the problem statement is ground combat forces, operating as part of joint, inter-organizational and multinational teams, are not sufficiently trained, organized, equipped or postured to deter or defeat highly capable peer enemies to win in future war.¹

The white paper states, “[a]dversaries will counter U.S. strengths such as air and maritime superiority, and degrade key capabilities by limiting access to space, cyberspace, and the [electromagnetic spectrum]. Adversaries will also exploit perceived U.S. weaknesses such as time and distance for force deployment, logistics nodes, and vulnerable command and control networks.”²

Maj. Gen. William K. Gayler, commander of the U.S. Army Aviation Center of Excellence and Fort Rucker, said Multi-Domain Operations will be helpful given that potential enemies have observed the U.S. military’s strengths. Using their own technologies and tactics, those nations are seeking to overcome U.S. advantages in the five domains: space, air, land, sea and cyberspace.³

For example, the Chinese People’s Liberation Army has “emphasize[d] the necessity of ‘destroying, damaging, and interfering with the enemy’s reconnaissance . . . and communications satellites,’ suggesting that such systems, as well as navigation and early warning satellites, could be among the targets of attacks designed to ‘blind and deafen the enemy.’”⁴

Multiple Options

Incorporating long-range precision strike, integrated air defense, electronic warfare and cyberspace capabilities, MDO creates multiple difficulties for adversaries and multiple options for national leaders and Joint Force commanders.⁵ Army and Marine Corps forces can project persistent, land-based power into other domains for fully integrated joint maneuver and joint operations.

The MDO concept was formulated when the U.S. military was transitioning from counter-insurgency conflicts in the Middle East to the prospect of dealing with a peer adversary on the modern battlefield. A significant aspect of this concept is development of the Multi-Domain Task Force.

Gen. Mark A. Milley, the 39th Army Chief of Staff, stated that the task force is “a relatively small organization . . . 1,500 or so troops. That organization will be capable of space, cyber, maritime, air and ground warfare. So smaller dispersed, very agile, very nimble organizations—that are networked into other lethal systems that are delivered by either air or maritime forces—will be essential to rip apart the A2/AD networks.”⁶

Milley understood that the counterinsurgency fights in the Middle East have left the U.S. military challenged by peer adversaries in Eastern Europe and East Asia. He stated, “[I]and-based forces now are going to have to penetrate denied areas for the rest of the joint force while having the capacity to operate in all domains simultaneously.”⁷

A major player in MDTF experimentation is U.S. Army Pacific Command, currently commanded by Gen. Robert B. Brown. Under Brown’s supervision, the command employed the concept in a series of major exercises in fiscal years 2017 and 2018 to test its validity against a peer competitor in a wargame environment. These tests have been ongoing now for about a year with the MDTF Pilot Program.

In a recent example, at the multinational 2018 RIMPAC exercise, U.S. Navy P-3 and P-8 antisubmarine aircraft flew alongside Army Gray Eagle unmanned aircraft systems and AH-64E attack helicopters.

Brown stresses that cross-domain effects are not entirely new, citing the example of multi-domain effects created by the introduction of airplanes and submarines during World War I. He states that to achieve success with this new approach, there has to be a change in mindset and culture. Brown describes the three essential elements of the multi-domain concept as joint integration, technology and people.⁸

Dealing with a Peer

The Chinese have researched and adapted to the perceived U.S. advantages in technology, specifically in the space domain. They have adopted strategies to counter those advantages through the development and acquisition of a direct-ascent ASAT; missiles designed to strike mobile platforms at sea; a robust cyber force; and space-based assets. China’s overall strategy is an overarching plan of increased defense spending and technological advances that have catapulted China to the status of a peer adversary for the United States.

Testing of the ASAT in 2007 and 2014 is one A2/AD capability where China has demonstrated proficiency. The tests highlighted China’s capability to launch a weapon to both lower earth and geostationary orbits, which threatens all U.S. space-based assets. Many military

experts have argued that China will use this type of weapon early on in a conflict with the United States to degrade capabilities, such as GPS, that are dependent on space-based assets.

Another tool of the A2/AD fight that China has invested in is electronic warfare/jamming assets designed to degrade adversaries' GPS and satellite communications satellites and ground-based facilities. Chinese electronic warfare capabilities, specifically jamming, are focused on denying an adversary the use of space-based capabilities, thereby removing a position of advantage.

One key recognition in the MDO concept is that U.S. forces currently are not sufficiently trained, organized, equipped or postured to deal with a peer adversary. The concept also addresses the lack of awareness by senior leaders in regards to fighting in a degraded space environment.

The MDO white paper states that headquarters and subordinate units must be capable of operating in a degraded operational environment. The paper further states that the U.S. Army must reduce vulnerabilities through more redundant and survivable systems in such areas as Positioning, Navigation and Timing.

Recognize and Train

The first order of business is to recognize biases that military leaders have and how they are anchored in their beliefs. One of the biggest unrecognized biases is the anchoring effect. Psychologist Daniel Kahneman states that the anchoring effect happens when people consider a value for an unknown quantity before estimating the quality.⁹

Therefore, leaders must first realize the characteristics of the space domain before they make an assessment on its value. The method to approach this is through institutional, home station and Combat Training Center (CTC) education and training.

The Army Space Training Strategy is gaining momentum with the Army's maneuver force as training teams deliver instruction at unit home-stations and at Combat Training Centers. A continued emphasis from strategic down to tactical-level leaders is a practical solution to developing situational understanding across the force about degraded space operations. More realistic and demanding training on all facets of space-based capabilities ensures the United States achieves success in any conflict.

A major training objective during CTC rotations is to degrade and deny GPS reception through electromagnetic interference techniques for a fixed period. One of the common observations during this training was that most units did not recognize the importance of using mitigation techniques, such as encryption of GPS devices, prior to training. Also, units did not realize they were in a degraded environment and sometimes operated poorly in the situation.

Mobile training teams have noted that many of the CTC observer/controllers were able to provide immediate feedback to units regarding the degraded space environment. They also observed that many units were incorporating D3SOE into their operations orders and into their overall mission success criteria.¹⁰ This specific awareness by soldiers and leaders across the U.S. Army is essential for future conflicts.

The key observation made during these rotations was that units which operated effectively in the degraded space environment were those that had conducted D3SOE home-station training prior to their CTC rotation. Leaders of these organizations placed emphasis on

this training objective so the unit would be prepared to fight in a degraded GPS and space environment.¹¹

Such training is vital to preparing U.S. forces to operate effectively in a degraded space environment. The Department of Defense must ensure that there is continued emphasis placed on both home-station training and CTC rotational unit training in order for units to know how to fight in a disrupted space environment.

In a similar fashion, a critical component of the Multi-Domain Task Force's purpose is to ensure that leaders have a better understanding and appreciation for the correct space capabilities matched with the appropriate Army space professionals. Integration of both offensive and defensive space capabilities coordinated with the employment of cross-domain fires will enable the U.S. Army and joint force to achieve desired effects. If space-based capabilities are integrated into the task force, the A2/AD and anti-space effects that an adversary like China will employ should be neutralized or at least degraded.¹²

The correct composition of people with the proper skill sets within the task force is critical for forward stationing in order to provide coordinated effects on the battlefield. Space professionals are a critical component, but other specialties bring critical effects to the fight. Members of the cyberspace and electronic warfare communities are critical to synchronizing non-lethal fires for exploitation to create the greatest advantage possible against adversaries.

One key issue that the MDFT will address is the authorities aspect to ensure that these effects are conducted in time and space with synchronization of the other domains. These task force members will play a critical role in the U.S. military being able to extend its operational reach by countering the adversaries' attempts to degrade the space and other domains.¹³

Steps in the Right Direction

The MDTF concept is a step in the right direction in addressing the military problem of effectively fighting in a degraded space environment. The exercises in the U.S. Pacific Command region over the next few years will provide the necessary feedback to assess the concept's feasibility in dealing with the D3DOE threat.¹⁴ U.S. Army Pacific Command and the Army Training and Doctrine Command are collecting all relevant data to assess the concept in fiscal years 2018 and 2019 for future integration into doctrine and other exercises.

The last integral piece for the task force to deal with is the appropriate equipment disposition. The task force should employ appropriate available defensive and offensive space capabilities and capacities. Achieving that goal will take appropriations at the policy and strategic levels to procure the requisite amount of equipment. Doing so cannot be done overnight but can be planned and appropriated before 2030.

The MDO concept and the creation of the MDTF are much-needed changes in an emergent operational environment. These multi-domain approaches will ensure that the U.S. Army and joint force will be properly trained, equipped and postured to deal with the conflicts presented by Chinese strategy.

Multi-Domain Operations and the Multi-Domain Task Force will ensure that the U.S. Army creates opportunities for the land component to exploit against peer adversaries, and that these forces can effectively operate in an Anti-Access/Area Denial environment. The mandated Army Space Strategy and the Army Space Training Strategy will educate and train Army forces to operate in a degraded space environment.

The ultimate question is: Can the U.S. Army effectively operate in a degraded space environment?

Both the Army Space Training Strategy and the MDTF pilot program are steps in the right direction, but it still might not be enough in a current conflict. It does highlight that the issues of a degraded space environment and Anti-Access/Area Denial capabilities of peer adversaries have been evaluated and are being addressed appropriately.

The current state of Army readiness for a degraded space environment is still in need of improvement. Much more education at the institutional level and training at the tactical and operational levels needs to occur. The MDO concept is currently under evaluation during various exercises with the MDTF Pilot Program, and the MDTF creation will facilitate changes in mindset and organizations for the future fight.

Only time will tell if the U.S. Army and other military services can effectively fight in a degraded space environment, but current efforts and trends lead to an encouraging forecast shifting upward.

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¹ Michael Redman, "Multi-Domain Battle: Combined Arms for the 21st Century" (white paper, U.S. Army Training and Doctrine Command, Army Capabilities Integration Center, 2016), pg. 7.

² Ibid., pg. 5.

³ David Vergun, "Multi-Domain Operations to Exploit Enemy Vulnerabilities, Say Army Leaders," Army News Service, Sept. 10, 2018, https://www.army.mil/article/210929/multi_domain_operations_to_exploit_enemy_vulnerabilities_say_army_leaders.

⁴ Anthony H. Cordseman and Steven Colley, *Chinese Strategy and Military Modernization in 2015* (Washington: Center for Strategic and International Studies, 2015), pg. 37.

⁵ "U.S. Army Pacific Contributions to Multi-Domain Battle," brochure, U.S. Army Pacific, Mar. 15, 2017.

⁶ Sydney Freedberg Jr., "New Army Unit to Test Tactics: Meet the Multi-Domain Task Force," *Breaking Defense*, March 21, 2017, <http://breakingdefense.com/2017/03/new-army-unit-to-test-tactics-meet-the-multi-domain-task-force>.

⁷ Nathan A. Jennings, "Realign the Army for Multi-Domain Battle" (Arlington, Va.: Association of the United States Army, April 11, 2017), <https://www.ausa.org/articles/realign-army-multi-domain-battle>.

⁸ Robert B. Brown, "The Indo-Asia Pacific and the Multi-Domain Battle Concept," *Military Review* (September-October 2017), pg. 15.

⁹ Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011), pg. 87.

¹⁰ Joan Rouseau, "G37 HST and CTC Rotation Observations," *USASMDC/ARSTRAT Observations*, June 2017, pg. 4.

¹¹ Ibid, pg. 5.

¹² Todd South, "4-Star: Multi-Domain Battle Will Fundamentally Change How the Army, Other Services Fight," *Army Times*, Oct. 8, 2017, <https://www.armytimes.com/news/your-army/2017/10/08/4-star-multi-domain-battle-will-fundamentally-change-how-the-army-other-services-fight>.

¹³ Ibid.

¹⁴ Redman, pg. 5.