Logistics and Maneuver

Harnessing logistics agility to enable operations in contested environments

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"The history of war proves that nine out of ten times an army has been destroyed because its supply lines have been cut off."
—GEN Douglas MacArthur, Commander in Chief, U.S. Far East Command

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The Next Fight Won't Wait on Supplies

During a July 2025 Marine Corps University convocation, the 39th Commandant of the Marine Corps stated that a priority area of study was in contested logistics. This sentiment was reinforced by a representative of the Deputy Commandant for Installations and Logistics, who further clarified the need to solve several pressing problems, including mobilizing, closing the force, and sustaining the force in a contested environment; updating the Marine Corps' concept of employment for prepositioning; and turning the Global Positioning Network into a real capability. These priorities acknowledge a critical juncture in the Marine Corps and U.S. national defense enterprise, particularly in the Pacific, the United States' most consequential theater. The way the Marine Corps and the Joint Force fight will never be the same. Agile logistics operations, conducted across the competition continuum, are critical for success. These operations serve as a means to deter or disrupt adversarial plans while simultaneously generating options and potential for friendly forces to secure and exploit temporal, spatial, and cognitive advantage through maneuver and fires.

Today, the United States faces its first true peer competitor since 1945, capable of operating across each of the instruments of national power.[1] As ADM Paparo stated in his most recent U.S. INDOPACIFIC Command Posture Statement, China's "unprecedented military modernization and increasingly aggressive behavior threatens the U.S. homeland, our allies, and our partners."[2] Exacerbating this problem, the steadily increasing complexity of the information age, interconnectedness of the global economy and supply web, and shifting geopolitical context portends a significant change to the character of conflict that will likely include disruptions from key aspects of "Made in China 2025" that cannot be ignored—specifically to include disruption of U.S. and DOD logistics, cyberattacks on infrastructure, and denial of access. ("Made in China 2025" details China's goal of exploiting U.S. dependencies across industrial and supply networks by 2035).[3] The vulnerability of the global economy and supply chain network highlight that intricate supply chains, while efficient, contain hidden vulnerabilities.[4]

Unlike many conflicts of the past, the Marine Corps, as America's naval expeditionary force-in-readiness, cannot count on unfettered or uncontested access to the global commons or secure ports, which are a critical requirement for the employment of legacy power projection and sustainment capabilities.[5] Instead, future crises and conflicts are increasingly likely to occur in theaters that are contested in every domain, where lines of communication are denied or controlled by an adversary from the outset—and where even CONUS-based installations no longer guarantee sanctuary.[6] In short, the Marine Corps must apply the tenets of maneuver across all warfighting functions—to include logistics—as an integrated and offensive capability, ensuring sustainment operations can move, adapt, and persist in contested environments. This necessity demands a modernized supply chain that embraces an agile culture of innovation to navigate global supply chain disruptions.[7]

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These contested environments demand an agile approach to logistics that prioritizes mobility, survivability, partnerships, and innovation to generate reach and tempo against the pacing threat while retaining the ability to rapidly adjust to less pressing problems.

Contested Sustainment Is the New Norm

In an era of precision fires, information warfare, and all-domain operations that span the competition continuum, the traditional notion of executing in logistics operations in a "rear area" is a relic of the past as logistics can be "contested" not only within an area of operations, but globally, as "contested logistics now occur across deep, close, and rear domains simultaneously."[8] Strategic sealift is vulnerable: according to *Defense Opinion*, the average age of the Maritime Administration's Ready Reserve Fleet is 44 years, with limited self-defense or cyber hardening, and many vessels retired years ago. At a recent activation exercise, only "60% of RRF ships were deemed ready and just 40% sailed on time."[9] Further, aerial ports like Kadena, Guam, and even CONUS locations like Travis AFB are already targeted in PLA strike modeling.[10] Maritime Preposition Force rotations are predictable, trackable via commercial Automatic Identification System, and visible via open-source satellite systems.[11] Finally, open-source procurement models are supported by unclassified requisitioning systems managed by a heavy footprint of civilians and contractors that can easily be tracked and infiltrated.

Yet today, the Marine Corps, in many cases, continues to plan, train, and deploy with logistics structures optimized to excel during conflict akin to what was experienced during Desert Storm, wherein access and power projection could occur at a time and place of the United States' choosing. As recent as 2019, deployed MEUs code repair part backorders (aboard ship)—knowing they will just clear the backlog once they are comfortably ashore. The Marine Corps' legacy approach, which, in many cases, favored efficiency over responsiveness, logistics is largely contingent upon time, security, and access materializing in the right time and place to sustain operations.[12]

The problem is that adversaries have devised systems and strategies to exploit our traditional approaches to sustainment. Adversarial doctrine explicitly notes plans to interdict and paralyze

A Marine High Mobility Artillery Rocket System (HIMARS) is delivered by a C-130J Super Hercules for staging at Kadena Air Base, Japan, in the first island chain. *(Photo by SSgt Natalie Doan.)*

Western logistics at the tactical, operational, and strategic levels.[13] They have also seen, in real-time, just how effective the interdiction of logistics systems can be as Russian aggression against Ukraine, a conflict that many assumed would be a speedy affair, has played out over the course of years.

The "near peer" is watching. They know where the United States stages, how U.S. forces move, and the challenges that we face in an expansive and geographically complex theater like the Pacific. Exercises like the Unified Pacific Wargame series show that adversaries strike sustainment before fires or maneuver units.[14] To counter this, the Marine Corps must shift its paradigm of logistics from "trailing the main effort" to "being the main effort until conditions are set for transition." Fortunately, logistics, unlike some other warfighting functions, has an inherent flexibility and utility that spans the competition continuum. Prepositioning, logistics network analysis, establishing enterprise-wide secured resource visibility, and securing access and familiarity of potential in-theater nodes, are all things that can be done now to ultimately disrupt if not deter adversarial decision making and action.[15]

Logistics and Maneuver

In *The Goal*, Goldratt emphasizes the need to manage constraints as "dynamic system elements," identifying that desired effects, not inventory or speed alone, determine real performance. This mindset shift aligns with replacing traditional organization models, "which evolved based on assumptions of stability and predictability, with agile organization models built on the agile thinking philosophy."[16] Marines must begin viewing logistics this way—fluid, decentralized, and constraint-driven. The Marine Corps must harness the complexity of contested logistics and identify how maneuver within this warfighting function can be leveraged to enable the success of all others through deliberate, dynamic positioning and movement of sustainment capabilities to create advantage across time and space. The Marine Corps needs a theory of logistics agility that prioritizes speed, dispersion, survivability, and adaptability "to influence an adversary's risk calculations"and decision making by enabling maneuver.[17]

Logistics, which encompasses a wide range of activities, resources, and relationships, provides for the physical needs of a force by obtaining, managing, and positioning resources in the correct quantity at the right location at the right time to enable the success of military operations. Ultimately, logistics provides a joint force commander with the means

to facilitate freedom of action, exploit an enemy's critical vulnerabilities, protect friendly capabilities, and extend operational reach—the distance and duration over which a force can effectively employ its military capabilities.[18]

Logistics Agility

We define an agile logistics system as an "an expeditionary sustainment system that maximizes operational reach through a flexible networked structure of options for multi-nodal and multimodal distribution and that can rapidly respond to changes in the operational environment through the investment of resources into preparation of the environment, planning, processes, technology, and people."

The core aspects that enhance the agility of a logistics system include offensive mindset; mobility, dispersion, and survivability; decision support tools and innovation; and transformative sustainment architectures.

First, logistics is not merely a trailing support function; it is an operational necessity in today's conflicts. Sustainment, when guided by an offensive mindset, seizes time and space in the same way that combat units seize terrain. This means that offensive logistics involves positioning fuel, ammunition, maintenance capabilities, and information to create options before the adversary is compelled to respond.

Imagine logistics as a series of light switches and valves—keeping all switches on during campaigning, then selectively operating a few to manage flow during a crisis. The act of switching between these options is the essence of agility, providing a commander with flexibility and responsiveness in an operational context. This aspect of agility applies across all of the functions of tactical logistics, as well as the often overlooked aspects of contracting and host-nation support that are vitally important to the success of expeditionary operations, which are, by definition, always "away games".

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Offensive logistics necessitate forward, mobile, and survivable sustainment nodes that can displace, remain concealed, and reappear at strategically determined locations. It directly integrates into targeting strategies, denying the enemy sustainment through interdiction, supply-chain disruption, and control of critical access points, thereby making offensive logistics a vital shaping operation. This approach sets the conditions for reach, accelerates decision cycles, and maintains initiative across the competition continuum.

Viewing logistics as an offensive capability requires a mindset shift from seeing it solely as a sustainment function to recognizing it as a deliberate offensive action that creates advantages. Commanders must understand how logistics can enhance performance and generate desired effects, from denial to deception, in a similar fashion to other warfighting functions.

Second, in a contested environment, every logistics node and link is likely a target. Thus, mobility is the first layer of survivability and resilience. The priority lies in the capacity to rapidly move and sustain forces by air, sea, and subsurface. In combination with dispersion and deception, mobility enables flexibility and responsiveness by mitigating the effects of disruption and providing options to ensure that no single point of failure can undermine operations.

Mobility, dispersion, and survivability demand low-signature and modular sustainment elements capable of operating from existing and austere locations, shifting within hours, and reconstituting into larger constructs as operations evolve. Movements must be unpredictable, redundant when necessary for deception, and Marines must be capable of obscuring signatures across all domains. Survivability planning cannot be separated from mobility planning—logistics that cannot move are already lost. By combining dispersion, mobility, and deception, agile logistics systems can endure under fire, support dispersed combat units, and deny the enemy simple targeting solutions.

Third, logistics maneuver relies on decision support tools to influence command decision cycles and enhance clarity despite complexity. This can now be enabled by secure dashboards capable of integrating existing data points in the Integrated Data Environ-

A Marine Tactical Resupply Unmanned Air System flies with three water jugs for the rapid resupply of small units in hard-to-reach locations. *(Photo by Cpl Damian Oso.)*

ment/Global Combat Support System-Marine Corps, and Defense Logistics Agency–Troop Support, focused on packages, capabilities, and manpower constraints in realtime. The goal is rapid, informed decision making that keeps sustainment operations relevant and responsive.

Material solutions are crucial for effective sustainment. A modern sustainment network must be opportunistic, leveraging every available resource to keep the joint force relevant. This includes integrating prepositioned stocks, support from allied and partner nations, field ordering officer authority, and local foraging into a single adaptive concept that generates sustainment from both planned and improvised sources.

The modern concept of endurance derives from the ability to move rather than store. This capacity for endurance is part of physical agility and is enabled by multi-sourcing and alternative parts that promote sourcing flexibility, coupled with close alliances with contract manufacturers who provide visibility of supply, demand, inventory, and issues.[19] This includes exploiting additive/subtractive manufacturing and adaptive platforms to reduce reliance on vulnerable supply lines.

Fourth, agile logistics systems must prioritize reconstituting the force during and after disruptions. This goal relates directly to supply chain resilience, defined as "the ability to resist, withstand, and recover from shocks."[20] This requires shifting from a static map of assets to a dynamic and integrated sustainment system.

When necessary, this network should be able to transition to submerged capabilities and subsurface distribution. The goal is not simply to move supplies faster; rather, it is to enable more locations, diverse patterns, and various platforms to sustain the fight, allowing the Joint Force to absorb, respond, recover, and adapt under pressure in a time-compressed environment. We need not look further than industry for a number of examples where agility was crucial in overcoming significant challenges related to disruption.

What Industry Learned the Hard Way

Amazon revolutionized global logistics—especially in the aftermath of disruptions like Katrina and the 2011 tsunami—by embedding artificial intelligence-driven warehouse routing, predictive demand models, and modular staging to sustain operational speed. As noted in *Logistics Viewpoints*, "Amazon has integrated artificial intelligence throughout its supply chain to improve demand forecasting, logistics, and inventory management."[21] Similarly, a *C-DO Times* case study emphasizes how artificial intelligence-powered demand forecasting, robotics, and optimized routing position Amazon to quickly adapt to disruptions.[22]

DHL developed Resilience360 in response to delivery failures during crises such as the 2011 Japanese tsunami. Today, it is capable of rerouting packages in realtime by considering thousands of variables, including geopolitical, environmental, and cyber events.[23]

Maersk shifted from fixed shipping schedules to a globally adaptive, risk-aware container network after experiencing piracy and cyberattacks, notably the NotPetya incident in 2017. The company now utilizes digital twins to model logistics movements and adjust routes based on risk and availability.[24]

When a consumer package can navigate contested shipping lanes more reliably than a Marine rifle squad, the issue lies not in funding, but in mindset.

The Marine Corps Cannot "Figure Out" Logistics Later

In every fight, logistics delivers the opening salvo—and the last shot fired. *"Aboard ship"* is a symptom of deeper thinking failures and a general failure of innovation and initiative. If Marines cannot close and maneuver a force, the probability of achieving objectives within the constraints of a planned concept of operations and the time available is low. Worse: if Marines cannot sustain those forces and persist once deployed, they are merely gambling with American blood and treasure.

The initial publication of *FMFM 1, Warfighting*, in 1989, served as a demarcation line for the Corps in its adoption of a warfighting philosophy oriented on maneuver warfare. Unlike attrition warfare, maneuver aims to circumvent obstacles and threats, and attack from positions of advantage, exploiting fleeting opportunities, and achieving leverage of strengths against weaknesses. Ultimately, through a philosophy of maneuver warfare, one aims to incapacitate an enemy system and collapse the will to resist. Success in maneuver is often disproportionate to the effort made, making logistics agility both appealing in a resource-constrained, contested environment, but also opening an opportunity to view logistics as an option for maneuver.[25] After all, one must look beyond the narrow paradigms placed upon logistics and sustainment as an enabling function and recognize the potential for logistics as an option for maneuver, if not the main effort during assurance, deterrence, and response to a wide range of contingencies.[26]

The Marine Corps must reconceptualize logistics as a source of maneuver potential rather than a warfighting function that exists solely to support or enable all others.

To prevail today, the Marine Corps must reconceptualize logistics because a force that does not have the means to fight, which sustainment provides, is irrelevant. Logistics is not merely a function of sustainment but a critical source of advantage.

Logistics is the pacing function that underwrites viable options, dictates operational reach, and extends the

culminating point of military forces. As Napoleon witnessed during his trials and tribulations in Russia, the will of an opponent with superior combat power can be broken without a fight (even after seizing a capital); however, an expeditionary force cannot operate abroad without a sustainment system with sufficient capability and capacity to satisfy critical requirements and agility to adapt to changing conditions in an operational environment. In an era of contested logistics, the concept of agility is the answer.

>The views expressed are those of the authors and do not reflect the official policy or position of the Department of War or the U.S. Government.

Notes

1. Cesar Augusto Rodriguez, Timothy Charles Walton, and Hyong Chu, "Putting the 'FIL' into 'DIME': Growing Joint Understanding of the Instruments of Power," *National Defense University Press,* April 1, 2020, https://www.google.com/url?q=https://ndupress.ndu.edu/Media/News/News-Article-View/Article/2106566/putting-the-fil-into-dime-growing-joint-understanding-of-the-instruments-of-pow/&sa=D&source=docs&ust=1755887354093106&usg=AOvVaw1Qd5MQGqPLER6UXiKRVIBh.

2. Samuel J. Paparo, *U.S. INDO-PACIFIC Command Posture* (Washington, DC: April 2025), https://armedservices.house.gov/uploadedfiles/indopacom_posture_statement_2025.pdf.

3. Ferial Ara Saeed, "The Sino-American Race for Technology Leadership," *War on the Rocks,* April 23, 2021, https://warontherocks.com/2021/04/the-sino-american-race-for-technology-leadership.

4. Steve Tracey, Kusumal Ruamsook, and Galen Smith, "Cultivating Relentless Supply Chain Agility at IBM", Supply Chain Management Review, January/February 2022..

5. John Sattely and Jesse Johnson, "Sustaining Distributed Forces in a Conflict with China," *War on the Rocks,* April 21, 2023, https://warontherocks.com/2023/04/sustaining-distributed-forces-in-a-conflict-with-china.

6. Andy Breach, "The 'Rear Area' No Longer Exists," *RealClear Defense*, March 11, 2021, https://www.realcleardefense.com/2021/03/11/the_rear_area_no_longer_exists_767707.html.

7. "Cultivating Relentless Supply Chain Agility at IBM."

8. "The 'Rear Area' No Longer Exists."

9. Steven Wills, "Aging U.S. Ready Reserve Fleet in Need of a Big Boost," *Defense Opinion*, December 19, 2023, https://defenseopinion.com/aging-u-s-ready-reserve-fleet-in-need-of-a-big-boost/494.

10. Eric Heginbotham, Michael Nixon, Forrest E. Morgan, Jacob L. Heim, Jeff Hagen, Sheng Tao Li, Jeffrey Engstrom, Martin C. Libicki, Paul DeLuca, David A. Shlapak, et al., "An Interactive Look at the U.S.-China Military Scorecard," *RAND,* September 14, 2015, https://www.rand.org/paf/projects/us-china-scorecard.html.

11. Information available at https://www.cna.org/centers-and-divisions/cna.

12. Joslyn Fleming, Katherine Guthrie, and Colin Smith, "Why The Marines Matter," *War on the Rocks*, April 5, 2023, https://warontherocks.com/2023/04/why-the-marines-matter.

13. Trevor Phillips-Levine, "The Art of Supply Chain Interdiction: To Win Without Fighting," *War on the Rocks*, May 26, 2023, https://warontherocks.com/2023/05/the-art-of-supply-chain-interdiction-to-win-without-fighting.

14. Sarah Ray, "US Army Pacific Hosts Sustainment-Focused Wargame," *Army.mil*, April 12, 2023, https://www.army.mil/article/265709/us_army_pacific_hosts_sustainment_focused_wargame.

15. Aaron Angell, "Logistics as Maneuver," *Marine Corps Gazette*, March 2022, https://www.mca-marines.org/wp-content/uploads/Logistics-as-Maneuver.pdf.

16. "Cultivating Relentless Supply Chain Agility at IBM."

17. Marcus Gillett, "The Role of Logistics in Deterrence," *Marine Corps Association*, February 15, 2024, https://www.mca-marines.org/gazette/logistics-in-deterrence/#:~:text=This%20article%20advocates%20that%20logistics,risk%20calculations%2C%20reinforcing%20strategic%20signaling.

18. Office of the Joint Chiefs of Staff. Joint Publication 3-0: Joint Operations. (Washington, DC: Incorporating Change 1, 2018).

19. "Cultivating Relentless Supply Chain Agility at IBM."

20. Susan Lund et al., Risk, Resilience, and Rebalancing in Global Value Chains (New York: McKinsey & Company, August 2020)

21. Jim Frazer, "Amazon and the Shift to AI-Driven Supply Chain Planning," *Logistics Viewpoints*, March 26, 2025, https://logistics-sviewpoints.com/2025/03/26/amazon-and-the-shift-to-ai-driven-supply-chain-planning.

22. Carsten Krause, "Case Study: Amazon's AI-Driven Supply Chain: A Blueprint for the Future of Global Logistics," *CDO Times*, August 22, 2024 https://cdotimes.com/2024/08/23/case-study-amazons-ai-driven-supply-chain-a-blueprint-for-the-future-of-global-logistics.

23. FreightWaves Staff, "DHL Talks Progress of Resilience360 at LINK 2019," FreightWaves, February 26, 2019, https://www.freightwaves.com/news/logistics-dhl-talks-progress-of-resilience360-at-link.

24. Dan Swinhoe, "Rebuilding after NotPetya: How Maersk Moved Forward," *CSO*, October 19, 2019, https://www.csoonline.com/article/567845/rebuilding-after-notpetya-how-maersk-moved-forward.html?.

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

26. Office of the Joint Chiefs of Staff, *Joint Publication 4-0, Joint Logistics* (Washington, DC: October 2013).

>This article was written following the AY25–26 Marine Corps University Convocation Ceremony—it is a thought model—and call to action for the logistics-type (and infantry) academics attending professional military education in AY25–26.