

For Want of Logistics Supremacy

A Monograph

by

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Abstract

For Want of Logistics Supremacy, by Maj Keith B. Nordquist, 60 pages.

Great power competition and the threat of large-scale combat operations (LSCO) form a complex problem-set for strategy, tactics, and logistics. The US Army recognizes the need to adapt for this complexity, but its current Multi-Domain Operations (MDO) concept underserves logistics. By exploring the theory, history, and doctrine behind military movement, a more holistic view emerges to correct MDO's conceptual gap. The remedy for the US Army is to cohere logistics in time and space by capturing the purpose it lacks: logistics supremacy. As a term and concept, logistics supremacy balances logistics with strategy and tactics as an equivalent consideration for all-domain unity of effort. It also clarifies the role of the Joint Logistics Enterprise (JLEnt) and its execution of Globally Integrated Logistics (GIL). Ultimately, logistics supremacy creates value for the US Army by helping to refine its all-domain thinking, understand its MDO movement vulnerability, and clarify its possible transition from contested environment preparation to LSCO.

Keywords: logistics, movement, supremacy, superiority, joint logistics concept, contested environment, Multi-Domain Operations (MDO), large-scale combat operations (LSCO), all-domain

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Abbreviations

CBA	Capabilities Based Assessment
GIL	Globally Integrated Logistics
J4	Joint Staff Directorate for Logistics
JCIDS	Joint Capabilities Integration and Development System
JLEnt	Joint Logistics Enterprise
LSCO	large-scale combat operations
MDO	Multi-Domain Operations
TPFDD	time-phased force deployment data
USTRANSCOM	US Transportation Command

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For Want of Logistics Supremacy

For want of a nail, the shoe was lost;
For want of the shoe, the horse was lost;
For want of the horse, the rider was lost;
For want of the rider, the battle was lost;
For want of the battle, the kingdom was lost,
And all for the want of a horseshoe nail.

—*The Oxford Dictionary of Nursery Rhymes*

Armies are made to move. Only then can they fight. Guided by strategic intent, military warfare is an intentional combination of movement and fighting. And yet the US Army spends an excessive amount of time planning for the fight. Soldiers focus on tactics to support strategy at the expense of movement. After twenty years of permissive sustainment in the Middle East and a legacy of logistics' subordination to combat, movement thought is atrophying.¹ And movement ignorance allows assumptions to replace planning when dealing with complex deployment and distribution problems. But assuming away movement complexity discounts fighting's critical antecedent and essential enabler: logistics. How can the US Army better balance logistics with tactics and strategy to prevent the neglect of movement? The answer is elusive because it requires more than acknowledging movement's complexity, criticality, or essentialness. It requires purpose. Much like Aristotle observed, one must understand a thing's purpose to fully explain its cause.² Today, the US Army is wanting for a clear purpose to military logistics, and that purpose is *logistics supremacy*.

Logistics supremacy as a term of professional art does not yet exist in doctrine, but the nursery rhyme offered above illustrates its potential value. Logistics supremacy is about precluding the catastrophe that occurs "for want of a nail," where minor omissions portend major

¹ Department of Defense, *National Defense Strategy: Sharpening the American Military Competitive Advantage* (Washington, DC: Office of the Secretary of Defense, 2018), 1; Kurt Ryan, "Power Projection Readiness: A Historical Perspective," *Army Sustainment* (May-June 2017), 24-27.

² Stephen Wolfram, *A New Kind of Science* (Champaign, IL: Wolfram Publishing, 2002), 1185.

consequences within complex systems. As Benjamin Franklin summarized it, “a little neglect may breed mischief.”³ The parable is useful because it helps structure better discovery, problem-solving, and shared understanding.⁴ For an army, the story illustrates how military logistics interact with what a soldier or “rider” can do and what their nation or “kingdom” wants. Logistics supremacy is an expression of this lesson: armies create options by understanding how tactics and strategy depend upon logistics to shape warfare’s volatile causality. The problem is the US Army does not yet think about movement like it does fighting.

The lack of movement thinking is most apparent in the US Army’s emergent operational concept, Multi-Domain Operations (MDO). MDO focuses on problems of fighting when the US cannot assure dominance: great power competition and potential large-scale combat operations (LSCO). The concept emphasizes force posture to converge combat effects together. Through convergence, an army creates multiple dilemmas for an adversary and shapes environments for supremacy. The US Army calls this condition “overmatch,” the all-domain imperative to defeat regional destabilization, deter conflict escalation, and prevail in LSCO.⁵ Framed in such a way, MDO intentionally relates the act of convergence to combat. But such a frame neglects a more crucial discussion of how movement empowers convergence. Force posture alone cannot integrate the reinforcing combat actions of dispersed allies, interagency partners, and joint forces. Implied within MDO is the notion that convergence requires all-domain logistics to generate overmatch. Consequently, the US Army needs a more complete and purposeful understanding of movement to realize the goal of MDO.

³ Benjamin Franklin, “Poor Richard’s Almanack,” June 1758, in *The Complete Poor Richard Almanacks*, 375-377 (facsimile ed., vol. 2, 1970), 375, 377.

⁴ D. Gentner, L. Smith, “Analogical Reasoning,” in *Encyclopedia of Human Behavior*, 2nd ed., ed. by V. S. Ramachandran, 130-136 (Oxford, UK: Elsevier, 2012), 130-136.

⁵ US Department of the Army, Training and Doctrine Command Pamphlet 525-3-1, *The US Army in Multi-Domain Operations 2028* (Ft. Leavenworth, KS: US Army Training and Doctrine Command, 6 December 2018), v-xii, 46-48.

Completeness starts by reframing the act of convergence to include logistics. This expanded view allows MDO to better align with the emergent character of all-domain warfare, one demanding globe-spanning speed to execute cross-domain fires and maneuver.⁶ A purpose-built understanding is more difficult. It requires the US Army to acknowledge logistics lacks a clear purpose of itself. Currently, logistics is viewed as resilient and agile combat support for a lethal force.⁷ But this perspective entrenches the subordination of movement to fighting by disregarding the collaborative nature of logistics with tactics and strategy. It makes operational reach, culmination, and tempo secondary considerations to the fight, not equal elements of it.⁸ Subordination is the antithesis of operational art. Therefore, the purpose of logistics cannot just be supporting combat. It must also be elevating movement as an equal planning consideration so the US Army can achieve overmatch.

What follows in this research is an exploration of how the US Army can elevate movement through purpose. The study begins by critiquing and exploring relevant terms in the MDO discourse to explicitly define and relate logistics supremacy to current joint logistics concepts. With a contextualized definition, the research then explores how language shapes US Army thinking on logistics, where planners focus on LSCO instead of the contested environment. Next, the study structures a method to explore and evaluate the merits of logistics supremacy as a concept. The exploration includes an analysis of how combat forms the prevailing wisdom behind movement theory. It also examines what modern US history reveals for current logistics doctrine. The evaluation scrutinizes the relevance and coherence of a logistics supremacy concept, relating the value of aligning logistics in time, space, and purpose to elevating logistics with strategy and

⁶ Sean McFarland, 25 February 2020, “Joint Operations Need a Guiding Hand,” Association of the US Army, accessed 23 November 2020, <https://www.ausa.org/articles/joint-operations-need-guiding-hand>.

⁷ Department of Defense, *National Defense Strategy*, 7.

⁸ US Department of the Army, Army Doctrine Publication (ADP) 3-0, *Operations* (Washington, DC: Government Publishing Office, July 2019), 2-5.

tactics. By balancing movement with fighting, the research proposes the US Army can better support unity of effort. Ultimately, the goal of the study is to empower military planners to consider all-domain logistics and disallow the mischief, which breeds from movement's neglect.

The Government Accountability Office captured the cost of such neglect one month after the terrorist attacks of September 11th. In that perilous and uncertain time, the organization found it important to tender a report to Congress on the need for an overarching military logistics strategy. The report outlined the want for more purposeful logistics, a significance beyond just support. It sought to reorient military planning by balancing movement with tactics and strategy.⁹ Two decades later, it is time the US Army accept the report's recommendations. The all-domain context demands a purpose for logistics to best balance tactics and strategy. And by clarifying logistics' purpose as one pursuing supremacy, the US Army can better keep its forces on the move. After all, an army that can move is an army that can fight.

⁹ US General Accounting Office, "Defense Logistics: Strategic Planning Weaknesses Leave Economy, Efficiency, and Effectiveness of Future Support Systems at Risk" (Report to Congressional Committees, Washington, DC: Government Accounting Office, October 2001), 2-3, 15-16. The "US General Accounting Office" became the "US Government Accountability Office" in 2004.

The March is Dead; Long Live the March

Amateurs talk about tactics, but professionals study logistics.

—General Robert H. Barrow, US Marine Corps

As one US Army historian put it, “strategy and tactics and logistics are different aspects of the same thing. If completely separated, they become meaningless... No distinction in importance can be made between combat functions and...logistical functions.”¹⁰ Still, this understanding languishes. It requires the US Army to reject a preference for combat that entrenches movement’s separateness. As this section explores, preference becomes truth because an organization is much more open to confirming what it already knows than open to knowing.¹¹ The challenge for logistics supremacy is to conceptually unify what is actually known about logistics, tactics, and strategy. Consequently, its definition and understanding must allow the US Army to shape a more complete truth for unity of effort.

Truth first requires a common vernacular, a common reference, and a common logic. To remove preconceptions (and misconceptions) of the proverbial march, one must metaphorically kill and then resurrect an understanding of logistics in a relevant and coherent way. B. H. Liddell Hart observed “the only thing harder than getting a new idea into the military mind is getting an old idea out.”¹² This research seeks to do both. But that journey can occur if one is willing to acknowledge and revise narrow thinking to better make sense of the world.¹³ To kill the march and replace it with something more meaningful, the US Army must clarify new language, acknowledge movement’s strategic context, and identify an appropriate method of exploration.

¹⁰ James A. Huston, *The Sinews of War: Army Logistics 1775-1953* (Washington, DC: US Army Center of Military History, 1966), 656.

¹¹ Allan Bloom, *The Closing of the American Mind* (New York: Simon and Shuster, 1987), 25-43.

¹² Basil H. Liddell Hart, *Thoughts on War* (London: Faber & Faber, 1944), 115.

¹³ David Epstein, *Range: How Generalists Triumph in a Specialized World* (London: Macmillan, 2019), 115, 246-248.

Olde Words Curry Favor

Language is a vehicle for meaning. Words create understanding by helping one define why a thing matters. For movement, this suggests the need to explore doctrine's semantic space if logistics supremacy is to be purposeful. Semiotics allow a new term to structure possibilities and guide action by building upon the meaning in older words. In the US Army, doctrine enables the interpretation of language and permits planners to make meaning in its use. Therefore, logistics supremacy must use doctrinal words and meaning to craft a definition and a concept which cohere the language of movement. Only then can planners shape ideas about movement that relate to tactics and strategy in more relevant ways. But semantic significance cannot be formed in the abstract. Meaning requires an active and intentional discourse to form a term and concept's language, being, and activity.¹⁴ If this research is to clarify logistics' purpose, it must leverage doctrinal language to both inform movement's significance and enable its refinement.

Logistics is well understood by its current doctrinal definition, "planning and executing the movement and support of forces."¹⁵ The definition is simple and intuitive. It recognizes the need to support combat but focuses first on the general role of movement to create options in planning and execution. Unfortunately, doctrine offers no other definitions this balanced. Instead, doctrinal terms focus almost exclusively on logistics in relation to tactics, disregarding movement.¹⁶ By focusing the application of logistics on support in service to tactics, logistics loses significance of itself. Therefore, logistics benefits from another, broader definition that better excises a bias toward support and describes movement's potential in context. Such an

¹⁴ Klaus Krippendorff, *The Semantic Turn: A New Foundation for Design* (Boca Raton: CRC/Taylor & Francis, 2006), 1-7, 20-22, 56-57, 75.

¹⁵ Department of Defense, Chairman of the Joint Chiefs of Staff, *DOD Dictionary of Military and Associated Terms* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, June 2020), 132.

¹⁶ *Ibid.*, 45, 65, 118. Terms like "concept of logistics support," "directive authority for logistics," and various "joint logistics" expressions focus on common resourcing channels and user experience in support of operations.

equally simple and intuitive definition exists: “logistics is a system established to create and sustain military capability.”¹⁷ With both these definitions, one can begin to describe how logistics has functional agency within a more comprehensive movement context.

Doctrinally, logistics supremacy makes sense as a novel expression to assign logistics a purpose within such a context. This study defines logistics supremacy as the degree of logistical control and movement superiority wherein an opposing force is incapable of effective interference. The term provides a sense of agency by semantically invoking the option-creation implied by air and maritime supremacy. By extension, logistical superiority becomes analogous to other domain and functional definitions. It is the degree of logistical dominance that permits the secure, reliable conduct of operations at a given time and place without prohibitive interference.¹⁸ The benefit of these definitions lay in their simplicity and similarity to the language of combat. Such framing helps soldiers intuit movement’s equivalency to fighting.¹⁹ The definitions also allow logistics to gain access, express action, and interact additively with tactical language.²⁰ In this context, supremacy is analogous to MDO’s expression of overmatch, where degrees of dominance are relative to the means available to defeat an enemy or capability.²¹ Ultimately, one creates a common frame of reference by relating logistics to tactics

¹⁷ Jerome G. Peppers, Jr., *History of United States Military Logistics 1935-1985: A Brief Review* (Huntsville, AL: Logistics Education Foundation Publishing, 1988), iv.

¹⁸ Department of Defense, *DOD Dictionary of Military and Associated Terms*, 14-15, 56, 71, 90, 105, 137, 199. “Supremacy” lacks a generic doctrinal definition, thus common definition elements from “air supremacy” and “maritime supremacy” construct the expressed definition. “Superiority” also lacks a generic doctrinal definition, thus common definition elements from “air superiority,” “cyberspace superiority,” “electromagnetic spectrum superiority,” “full-spectrum superiority,” “information superiority,” “maritime superiority,” and “space superiority” construct this definition. No current joint definition acknowledges “parity.”

¹⁹ Steven W. Pate, “Transforming Logistics: Joint Theater Logistics.” (US Army War College Strategy Research Project manuscript, Carlisle Barracks, PA: US Army War College, 2006), 1-2, 18-19.

²⁰ Clifford Geertz, *The Interpretation of Cultures* (New York: Basic Books, 1973), 24-28.

²¹ Matthew A. Horning, 25 March 2019, “Information Overmatch: How Information Dominance Will Win Our Nation’s Wars,” US Army Acquisition Support Center, accessed 24 November 2020, <https://asc.army.mil/web/news-information-overmatch-how-information-dominance-will-win-our-nations-wars/>.

and strategy in accessible terms.²² Logistics supremacy as a term of professional art does that.

Shaping the definition space for the concept's application are recent joint logistics concepts released by the Joint Staff Directorate for Logistics (J4) in coordination with US Transportation Command (USTRANSCOM). In 2010, J4 foresaw the challenges from growing logistical complexity and crafted a *Joint Logistics Enterprise* (JLEnt) concept to better frame its global considerations. The intent of the concept was to model the aggregate capabilities of key logistics providers. It did this by articulating how joint sustainment relies upon a global system of support. In practice, however, the JLEnt concept focused combatant commanders on subordinate command user experiences and minimized the complexity of logistics in campaign plans. As a result, combatant command staffs pushed the work of preventing “undue logistics concerns” to J4’s confusing JLEnt puzzle (Figure 1).²³

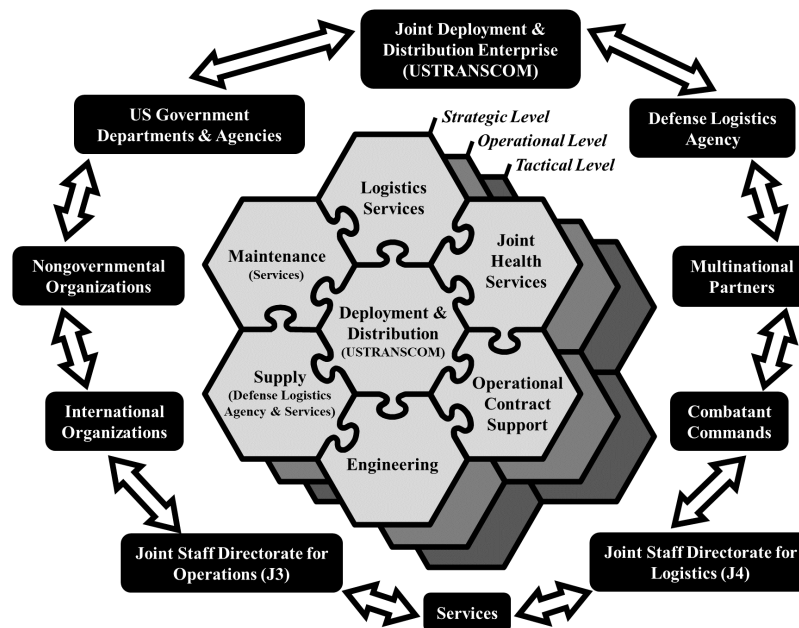


Figure 1. The JLEnt Puzzle. Created by author.

²² Jason A. Ballard, “Operational Art and the Sustainment Warfighting Function” (School of Advanced Military Studies monograph, US Army Command and General Staff College, Ft. Leavenworth, KS, 2012), 39-43.

²³ Department of Defense, Chairman of the Joint Chiefs of Staff, *Joint Concept for Logistics* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 6 August 2010), 1-36.

To resolve this unintended conceptual shortfall, the J4 staff crafted an additional concept in 2015: *Globally Integrated Logistics* (GIL). The intent of this concept was to reconcile the inadvertent density and separateness of the JLEnt with a combatant command's shortening timeframes. It did this by linking the JLEnt's expanding logistics demands to its modal constraints. Unfortunately, the GIL concept did not motivate holistic logistical planning as much as it fixated combatant commanders on the primacy of "globally integrated operations." Combatant command staffs therefore focused on prioritizing urgent logistical needs with USTRANSCOM to compete for finite modal resources. By concentrating staffs on timely integration over context, GIL highlighted a process of efficient connection over effective deployment and distribution.²⁴ Moreover, it failed to address the persistent and increasing threat of all-domain attack created by the contested environment, from factory to foxhole.²⁵ (Figure 2).

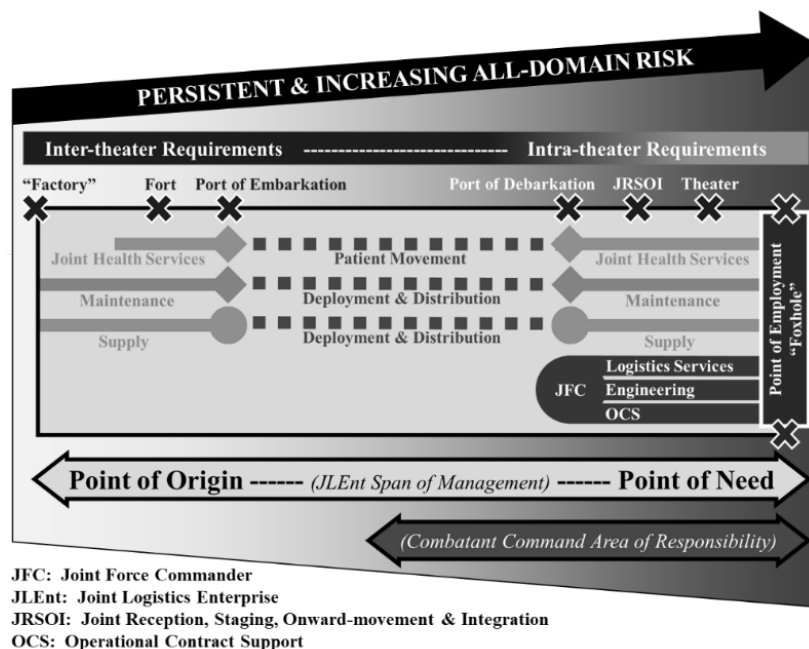


Figure 2. The GIL Process. Created by author.

²⁴ Department of Defense, Chairman of the Joint Chiefs of Staff, *Joint Concept for Logistics*, ver. 2.0 (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 25 September 2015), 1-20.

²⁵ Keith B. Nordquist, "A Comedy of Air Errs? The All-Domain Risk Horizon for Strategic Airlift" (US Army Command and General Staff College thesis, Ft. Leavenworth, KS, 2020), 80-82, 134-135.

Today, both JLEnt and GIL concepts endure in doctrine as useful but incomplete and dense ideas. The JLEnt is currently defined as “a multitiered matrix of key global logistics providers cooperatively structured through an assortment of collaborative agreements, contracts, policy, legislation, or treaties utilized to provide the best possible support to the Joint Force Commander or other supported organization.” GIL is defined as “the capability to allocate and adjudicate joint logistics support on a global scale to maximize effectiveness and responsiveness, and to reconcile competing demands for limited logistics resources based on strategic priorities.” Both definitions are intended to achieve a joint logistics imperative of “unity of effort,” defined as “the coordination and cooperation toward common objectives...[with] a clear understanding of how joint and multinational logistics processes work [to] know the roles and responsibilities of the providers executing tasks in those processes, build agreement around common measures of performance, and ensure appropriate members of the JLEnt have visibility into the processes.”²⁶

J4’s pursuit of clarity with these impenetrable definitions fails because they do not create shared understanding. By defining the JLEnt and GIL in inaccessible ways, the joint staff only exacerbates a conceptual gap between logistics and tactics and strategy. These definitions also further a view that logistics doctrine is unapproachable, “a multidimensional system beyond comprehension.”²⁷ The result is a US Army that finds it easy to dismiss joint logistics challenges because doctrine is confusing and nondirective. The ultimate failure of current guidance is that it outlines what a military logistics system considers, not why its authorities and capabilities exist. Logistics doctrine lacks purpose. As a result, JLEnt and GIL concepts can only orient combatant commands on unique space and time considerations because they lack external relevance. Time and space alone are not internally coherent, and they cannot deepen shared understanding.

²⁶ Department of Defense, Chairman of the Joint Chiefs of Staff, Joint Publication 4-0, *Joint Logistics* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 4 February 2019, incorporating change 1, 8 May 2019), I2-I5.

²⁷ J. R. Mott, Jr., “Logistics Distribution in a Theater of Operations” (School of Advanced Military Studies monograph, US Army Command and General Staff College, Ft. Leavenworth, KS, 1991), 39-40.

To apply operational art in the arrangement of activity, the US Army requires time, space, *and* purpose.²⁸ Therefore, to make logistics more accessible and understandable to a combat-oriented force, the US Army requires a concept that clearly articulates logistics' purpose of itself. Purpose can forge a meaning beyond the efficiency possible in time and space and reintroduce soldiers to the movement in logistics' doctrinal definition. And by aligning logistics in time, space, and purpose, the US Army creates synergy. According to doctrine, synergy is the synchronization, coordination, and integration of activities that enable unity of effort.²⁹ Logistics supremacy empowers synergy because it fills logistics' conceptual gap: a missing purpose to elevate support *and* movement (Figure 3).

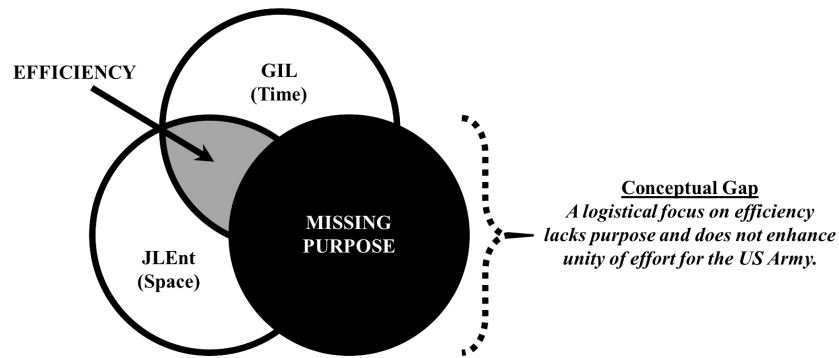


Figure 3. The Missing Purpose. Created by author.

Large-Scale Blacksmiths in Contested Realms

Filling a conceptual gap is a lot like the art of blacksmithing. Both involve the skillful creation of useful objects. In a movement context, the object is logistics' purpose and its current blacksmiths are operational concepts. Unfortunately, concepts like MDO remain incomplete because logistics lacks a doctrinal purpose. And without purpose, military movement problems

²⁸ US Army, ADP 3-0, *Operations*, 2-1.

²⁹ Department of Defense, Chairman of the Joint Chiefs of Staff, Joint Publication 3-0, *Joint Operations* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 17 January 2017, incorporating change 1, 22 October 2018), I1, I8, A2.

can only focus on time and space to improve throughput, to “git thar firstest with the mostest.”³⁰ Planners thus concentrate on the fight that demands the greatest speed and the most things: LSCO. Yet, this focus discounts movement in a contested environment, and it primes logistical thought to emphasize the protection of distribution networks and deployment infrastructure. Indeed, Sun Tzu suggests armies should “carefully guard [their] line of supplies...to fight with advantage.”³¹ However, a single-minded understanding of military logistics as throughput makes the system vulnerable to large shocks. In Sun Tzu’s adage, concepts like MDO focus planners on words like *guard* and *fight* at the expense of nuance. Words like *carefully* and *advantage* imply a much broader and complex interaction of movement with tactics and strategy, not a subordinate or linear function of support.

By creating an artificial subordination of logistics to tactics, military professionals unintentionally make both fragile. The core functions of joint logistics (deployment and distribution, supply, maintenance, logistics services, operational contract support, engineering, and joint health services)³² further entrench an inclination to subordinate logistics into parts. The result is a military now embracing combat as an all-domain whole but logistics as domainial pieces. Concepts like MDO lead planners to forgo an elegant conceptualization of logistics’ functions³³ and focus on hardening separate elements like ports or lift assets to preserve throughput. What planners actually need to do is plan more purposefully so they can create conditions for all-domain logistics to succeed in expanding complexity.³⁴ There are limits to

³⁰ Ralph Keyes, *The Quote Verifier: Who Said What, Where, and When* (New York: St. Martin’s Publishing Group, 2007), 272.

³¹ Sun Tzu, *The Art of War*, in *Roots of Strategy: The 5 Greatest Military Classics of All Time*, 13-64, ed. by Thomas R. Phillips (Harrisburg, PA: Stackpole Books, 1985), 47.

³² Department of Defense, Joint Publication 4-0, *Joint Logistics*, II1-II13.

³³ Anastasia Osypenko, 2 July 2019, “Logistics Problems and Solutions: How Mobile Apps Serve the Transportation Industry,” MadAppGang, accessed 25 November 2020, <https://madappgang.com/blog/logistics-problems-and-solutions-how-mobile-apps-serve-the-transportation-industry>.

³⁴ US Transportation Command, 2020, “Strategic Priorities,” US Transportation Command, accessed 21 December 2020, <https://www.ustranscom.mil/cmd/docs/USTC%20Strategic%20Principles.pdf>.

protection when systems must learn to function as wholes under duress in the contested environment; “one cannot be robust against everything.”³⁵

Hardening is well-intentioned to maximize throughput under a direct LSCO threat, but it presumes US military logistics will operate as it has since World War Two: uncontested. This presumption creates a foundation for strategic surprise.³⁶ It leads combatant commanders to over-emphasize assumption-laden, regionally-focused, and potentially improbable time-phased force deployment data (TPFDD) over a broader milieu. If combatant commander thinking on logistics is predicated upon their experience,³⁷ then the relatively permissive context of operations since World War Two assumes a level of impunity that is now obsolete. Impunity biases logistics thinking toward delivered TPFDD products, not delivery processes. It amplifies support and diminishes movement. To become antifragile and thrive in contested conditions, movement and fighting must instead find a purposeful way to flourish together with strategic intent. MDO demonstrates the US Army does not lack the conceptual means to attack; it lacks the conceptual means to understand movement under contested conditions. Therefore, movement under uncertainty demands a clear purpose that promotes flexibility, not just hardening.³⁸

In the contested environment, flexible movement is the military’s method of adaptation for unpredictable and dynamic contexts. Just like a body requires legs to accomplish movement, “war is mainly a question of legs” to adapt and accomplish tactical and strategic objectives.³⁹ But great power competitors do not wish to engage the US or its allies in permissive contexts where those legs can stretch out. Looking to avoid a fight rather than have one, they simultaneously

³⁵ Nassim N. Taleb, *Antifragile: Things That Gain From Disorder* (New York: Random House, 2012), 37, 83-85.

³⁶ Douglas Macgregor, *Margin of Victory: Five Battles that Changes the Face of Modern War* (Annapolis, MD: Naval Institute Press, 2016), 173-180.

³⁷ Huston, *The Sinews of War*, 25.

³⁸ Moshe Kress, *Operational Logistics: The Art and Science of Sustaining Military Operations* (Boston: Kluwer Academic Publishers, 2002), 187.

³⁹ George A. Furse, *The Art of Marching* (London: William Clowes and Sons, Ltd., 1901), 100.

contest access across all domains. Logistics becomes a preeminent target for an adversary's disruption. While MDO emphasizes the anti-access and area-denial fight, adversaries focus on making MDO movement to that fight untenable. Competitors extend and disrupt US Army lines of communication to build stand-off. And this is not a problem for support or tactics and strategy alone. Today, the soft under-belly for the US Army is not in its lethal tools but in its long logistics tail to get to a fight..⁴⁰

The overmatch which LSCO and MDO seek remains unattainable because they fail to understand how logistics shapes access in the contested environment. But by understanding logistics as support *and* movement, the US Army can enable the autonomy, initiative, and responsiveness it needs to confront uncertainty..⁴¹ As tempting as it is to focus on a near-peer fight, doing so cannot be at the expense of understanding how movement creates options and synchronizes activity. Movement is what makes logistics more reciprocal, influential, and active in operational planning..⁴² Therefore, logistics supremacy represents a conceptual way to confront the realities of the contested environment.

A New Kiln for the Kingdom

If crafting a new concept is like blacksmithing, then the US Army needs a new kiln to conceptualize contested all-domain logistics. Such a furnace for thinking benefits by spiraling deductive and inductive logic together to forge more meaningful ideas. Consequently, an exploration of logistics' purpose requires a mixed methodology which combines hypothesis-driven analysis and content-based synthesis..⁴³ The two methodologies used in this research are

⁴⁰ Darren McDew, "Power Projection in the Digital Age," PRISM 7, no. 2, (2017), 31-38.

⁴¹ Eric-Hans Kramer, *Organizing Doubt: Grounded Theory, Army Units and Dealing with Dynamic Complexity* (Malmö, Sweden: Liber AB, 2007), 10-13, 159, 248-252.

⁴² M. Erbel, C. Kinsey, "Think Again – Supplying War: Reappraising Military Logistics and its Centrality to Strategy and War" (manuscript, London: City University of London, 2015), 1-5, 25-26.

⁴³ Greg Guest, Kathleen M. MacQueen, Emily E. Namey. *Applied Thematic Analysis* (Thousand Oaks, CA: Sage Publications, Inc., 2012), 5-8.

the Joint Capabilities Integration and Development System's (JCIDS) Capabilities Based Assessment (CBA) and the grounded theory methodology. The former frames the US Army's current understanding of logistics, tactics, and strategy together, and the latter outlines how soldiers can better cohere and understand logistics with purpose. Together, a deductive CBA and an inductive grounded theory methodology can holistically close a conceptual gap like that between logistics, tactics, and strategy.⁴⁴ Both relate equally to understanding movement's value.

The JCIDS' CBA structures an initial analysis in a manner relevant to military logistics equities and strategic sponsors. As the Department of Defense's business practice for future force development concepts, JCIDS enables the methodical analysis of current conceptual requirements, deficiencies, and recommendations.⁴⁵ Its CBA framework does this by probing the military's interplay of context and thought "to deal with new phenomena for which theory has not yet been well developed."⁴⁶ Specifically, the CBA employs three progressive analyses to comprehend a context for change: the Functional Area Analysis, the Functional Need Analysis, and the Functional Solution Analysis.⁴⁷ The Functional Area Analysis outlines relevant considerations based upon the theoretical evolution of military logistics. It answers how logistics relates itself to warfare. By examining the controlling wisdom contained within theory, the research can then address logistics' modern history. The Functional Need Analysis subsequently explores conceptual changes based upon this history. It answers how logistics actually functions

⁴⁴ John L. Gaddis, *The Landscape of History: How Historians Map the Past* (Oxford: Oxford University Press, 2002), 43-52.

⁴⁵ Department of Defense, Joint Staff Force Structure, Resource, and Assessment Directorate (J8), Chairman of the Joint Chiefs of Staff Instruction 5123.01H, *Charter of the Joint Requirements Oversight Council and Implementation of the Joint Capabilities Integration and Development System* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 31 August 2018), A2-A3.

⁴⁶ Harold R. Winton, "An Imperfect Jewel," in *Strategy: Context and Adaptation from Archidamus to Airpower (Transforming War)*, ed. by Richard J. Bailey, Jr., James W. Forsyth Jr., Mark O. Yeisley, 38-60 (Annapolis: Naval Institute Press, 2016), 51.

⁴⁷ Department of Defense, Joint Staff Force Structure, Resource, and Assessment Directorate (J8), *Manual for the Operation of the Joint Capabilities Integration and Development System* (Washington, DC: Officer of the Chairman of the Joint Chiefs of Staff, 31 August 2018), A2-A3.

in warfare. By exploring the manner the US Army acts in conflict, the analysis can capture possible conceptual deficiencies for an emergent all-domain paradigm. Finally, the Functional Solution Analysis scrutinizes doctrinal gaps created by these deficiencies to propose new conceptual considerations. It answers how logistics should relate itself to warfare. By investigating current thinking, the research can clarify logistics' role for an all-domain US Army. Ultimately, the CBA of theory, history, and doctrine allows the US Army to judge the suitability of logistics supremacy as a purposeful concept.

The development of John Boyd's "Observe-Orient-Decide-Act (OODA) Loop" provides a framework to facilitate such a suitability evaluation. For Boyd, ideas became suitable if they are expressible as conceptual models or quasi-deductive theories to educate policymakers on a "general knowledge of the conditions that favor the success of a strategy."⁴⁸ Thus, logistics supremacy can demonstrate suitability if it structures decision-maker understanding to ask better questions and select more relevant strategies. Boyd further outlines how moral, mental, and physical dimensions of warfare can become criteria for an assessment of external relevance. The moral dimension concerns the willpower to act, the mental dimension relates to structuring perceptions, and the physical dimension captures the interaction and effect of actors within their environments. If planners can think through problems across these dimensions faster, they increase the survivability of their strategy.⁴⁹ Therefore, the suitability of logistics supremacy can be evaluated by how well it helps harmonize the deduced relationship between logistics, tactics, and strategy within the moral, mental, and physical being of the US Army (Figure 4).

⁴⁸ Frans P. B. Osinga, *Science, Strategy, and War: The Strategic Theory of John Boyd* (London: Routledge, 2007), 9-17.

⁴⁹ John R. Boyd, *A Discourse on Winning and Losing*, ed. by Grant T. Hammond (Maxwell Air Force Base, AL: Air University Press, 2018), 196-207.

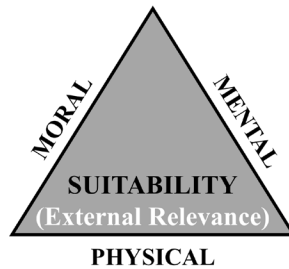


Figure 4. Deductive Suitability Criteria. Created by author.

Suitability without feasibility is incomplete to promote the US Army's acceptance of a concept.⁵⁰ Ideas must also be internally coherent. The grounded theory methodology helps explore and identify patterns from the JCIDS CBA to let logistics' nature reveal itself in a feasible way. As a method, grounded theory enables the research to refine an achievable application for logistics supremacy through broader abstraction.⁵¹ This is because the methodology expands the aperture to understand the samples discussed in the CBA as instances that shape a more purposeful whole for logistics.⁵² Through inference of this whole, logistics supremacy can cohere the time, space, and purpose of military logistics. Internal coherence makes logistics supremacy feasible as both a term and a concept.

To evaluate feasibility, the U.S. Army's principles of sustainment outline initial considerations for inductive reasoning. Those principles include survivability, continuity, anticipation, responsiveness, integration, improvisation, economy, and simplicity.⁵³ Moreover, the joint principles of logistics add depth by including flexibility, attainability, and

⁵⁰ US Department of the Army, ADP 6-0, *Mission Command: Command and Control of Army Forces* (Washington, DC: Government Publishing Office, July 2019), 2-6.

⁵¹ John W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 2nd ed. (Thousand Oaks, CA: Sage Publications, Inc., 2003), 14.

⁵² W. Alex Edmonds, Tom D. Kennedy, *An Applied Reference Guide to Research Designs: Quantitative, Qualitative, and Mixed Methods* (Thousand Oaks, CA: Sage Publications, Inc., 2013), 115-116.

⁵³ US Department of the Army, ADP 4-0, *Sustainment* (Washington, DC: Government Publishing Office, July 2019), 1-2, 1-3, 1-4.

sustainability.⁵⁴ Together, both US Army and joint principles can be framed under three broad criteria: capability, capacity, and readiness. Capability is the breadth of means available to create an effect or desirable condition, comprising principles of responsiveness, survivability, integration, and continuity within logistics systems. Capacity is throughput depth to flow logistics as enabled by capability, comprising principles of economy, simplicity, flexibility, and improvisation in the use of logistics systems. Readiness is access to the “ability of military forces to fight and meet the demands of assigned missions,” comprising principles of attainability, sustainability, and anticipation to maintain the quality and quantity of logistics systems.⁵⁵ Logistics supremacy is feasible if it informs the internal balance of these considerations (Figure 5).



Figure 5. Inductive Feasibility Criteria. Created by author.

⁵⁴ Department of Defense, Joint Publication 4-0, *Joint Logistics*, I8-I9.

⁵⁵ Department of Defense, *DOD Dictionary of Military and Associated Terms*, 35, 54, 56, 104, 180, 217. No explicit definition of ‘capability’ exists, but its definition can be intuited from “critical capability,” “cyberspace capability,” and “information-related capability.” Similarly, no definition of ‘capacity’ exists, but its definition can be intuited from “clearance capacity” and “throughput capacity.”

The Alchemy of Logistics in the Forge of Combat

Logistics is all of war-making except shooting the guns, releasing the bombs, and firing the torpedoes.

—Admiral Lynde D. McCormick, US Navy

Alchemy takes materials and combines them in meaningful ways to create something more from its parts. A forge applies heat and pressure to shape that whole for a purpose. Theory, history, and doctrine are this study's materials to smith a better deductive understanding of logistics. And the process of conceptual transmutation for logistics begins now, in what alchemy the US Army is willing to perform before the next war's forge requires learning through the hell of bitter experience.⁵⁶ Thus, logistics supremacy must be understood as an idea that helps soldiers see more wholly, make more relevantly, and analyze more open-mindedly.⁵⁷ As this section will show, creating something more with logistics requires it to be treated equally to tactics and strategy.

Reigning Wisdom

The classical understanding of logistics is that an army which masters movement will better provision their forces and create advantages for combat.⁵⁸ In short, logistics serves tactics. Of course, warfare was less dispersed and its durations far shorter in the distant past, naturally making logistics subordinate. But the legacy of transactional thinking between movement and combat still (falsely) orients planners on logistics as a linear and hierarchical function. Planners would do well to heed Carl von Clausewitz's cautionary note that "the smooth harmony of the

⁵⁶ Macgregor, *Margin of Victory*, 1-6.

⁵⁷ Seth Godin, *The Icarus Deception: How High Will You Fly?* (New York: Penguin Group, 2012), 15-17, 143-144.

⁵⁸ Sun Tzu, *The Art of War*, 37-38.

whole activity...is very simple, but that does not mean everything is very easy.”⁵⁹ Wisdom quite literally reigns from the past in theory, but that wisdom is often misunderstood in a modern and contested context of global movement.

As previously discussed, combat-oriented planners like to focus logistics on a delivered product over a delivery process, the TPFDD over global reach. This type of thinking has a strong intellectual foundation. Captured by Publius Flavius Vegetius Renatus in Ancient Rome, planners were taught to treat movement as an arduous precursor to fighting. At the time, logistics quite literally entailed “burdens” the soldier should carry with them. Seeking the means to provide armies “all the strength and conveniences of a fortified city,” Vegetius stressed the importance of preparation and calculation. Soldiers came to believe science was all that was required to keep an army supplied. While it remains true “an army unsupplied...will be vanquished without striking a blow,”⁶⁰ it is an incomplete foundation for modern movement problems. By focusing on preparation as support alone, Vegetius ignored logistics’ combinations with tactics and strategy in execution. Modern campaign planners too easily fall into this trap too, emphasizing the products of support before conflict and discounting the processes of movement.

It took over a millennium before military thought started to grapple with this incompleteness in a meaningful way. In 18th century Prussia, Frederick the Great began to merge product and process. Fearful of an inability to sustain a pursuit, he instructed his generals to “have within reach of your army your resources and your requirements.” Frederick intuited a more adaptive approach to movement and recognized how movement options informed his tactics and strategy. For a then-weak Prussia, warfare required more than logistical preparation. It also required a greater movement awareness in execution. Frederick thus developed a more complex

⁵⁹ Carl von Clausewitz, *On War*, ed. and trans. by Michael Howard, Peter Paret (Princeton, NJ: Princeton University Press, 1976), 178.

⁶⁰ Publius Flavius Vegetius Renatus, *The Military Institutions of the Romans*. In *Roots of Strategy: The 5 Greatest Military Classics of All Time*, 65-176, ed. by Thomas R. Phillips (Harrisburg, PA: Stackpole Books, 1985), 88, 121, 132, 158, 172.

and artful system of rear area depots and forward area convoys while appreciating the enemy's logistics needs. He concluded the "greatest secret of war and the masterpiece of a skillful general is to starve his enemy" while sustaining his own.⁶¹

Napoleon Bonaparte transformed Frederick's awareness of logistics for the 19th century. Believing foremost that an army's continuous readiness was critical, he related his army's capability to the proximity of its supplies. With "arms and ammunition at hand," French armies could deploy faster and mass more military power over time.⁶² Napoleon also empowered his subordinate units to find requisition opportunities from the country, to creatively solve logistics problems while moving and draw supplies from the theater of operations.⁶³ In essence, Napoleon delegated logistics' complexity to lower echelons by first recognizing logistics' equivalency to tactics and strategy. It left the era's most popular theorist, Antoine-Henri Jomini, to conclude only a military genius like Napoleon could truly master logistics. Napoleon's example remains telling considering his unrecoverable march to Moscow in 1812, which occurred in part because he failed to keep logistics an equivalent consideration with tactics and strategy.

Napoleon's successes (and failures) led Jomini to formally coin the term "logistics," finally naming that which remained an assumption for so long. Jomini defined it as "the practical art of moving armies," where its value lay in arranging the execution of both tactics and strategy. Jomini saw the complexifying scale of warfare as an activity of motion and concluded logistics was its apogee. He offered no less than eighteen principles for its conduct and acknowledged the possibility for numerous more. For Jomini, logistics embodied the total application of "all

⁶¹ Frederick II of Prussia, *The Instruction of Frederick the Great for His Generals*, in *Roots of Strategy: The 5 Greatest Military Classics of All Time*, 301-400, ed. by Thomas R. Phillips (Harrisburg, PA: Stackpole Books, 1985), 314-315, 321, 324-326, 391-392.

⁶² General Burnod, *The Military Maxims of Napoleon*, in *Roots of Strategy: The 5 Greatest Military Classics of All Time*, 401-441, ed. by Thomas R. Phillips (Harrisburg, PA: Stackpole Books, 1985), 409-410, 416.

⁶³ Peter Paret, "Napoleon and the Revolution in War," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton, NJ: Princeton University Press, 1986), 125.

possible military knowledge” to assemble military power for the operations of a campaign.⁶⁴

Conceptually, logistics now encapsulated detailed preparation and intentional execution with the fight. Movement became more than a product of being but a process of becoming.

Unfortunately, the growing complexity of the industrial revolution exacerbated the military planner’s combat dilemma. Military thinking had to grapple with more lethal forces, supplanting a refinement of Jomini’s ideas on logistics. While Jomini saw logistics as completing a whole with tactics and strategy, Ardant du Picq sought to ignore warfare’s movement problems by focusing on the fight. Du Picq captures the late 19th century’s cognitive retreat to tactics well. He dismissed logistics as becoming too complex and distracting for good order in combat because it detracted from understanding tactics as the main object of battle.⁶⁵ His thinking reveals how an army desires simplicity even when war is complex, and how that simplicity is often found in focusing on the fight. But one cannot wish away the problems of logistics by subordinating them to combat.

Thinkers like Helmuth von Moltke the Elder also retreated to the comfort of Vegetius-like subordination. For Moltke, military strategy prioritized logistics first but then went on with the real work of warfare: tactics. He viewed movement in service to fighting, a unidirectional and transactional relationship where lines of communication brought war but did not fight it nor secure a decisive result. Moltke believed “each and every addition to the communications...must be considered a military advantage” because it enabled more armies to fight in more places, not because it compelled a decision. Any disruption to logistics was merely an interruption to operations, to be overcome by the primacy of the army in the field.⁶⁶ Unsurprisingly, Moltke’s

⁶⁴ Antoine H. Jomini, *The Art of War*, trans. by G. H. Mendell, W. P. Craighill (Philadelphia: J. B. Lippincott and Co., 1862), 70, 253-265.

⁶⁵ Ardant du Picq, *Battle Studies*, in *Roots of Strategy Book 2*, 9-300 (Harrisburg, PA: Stackpole Books, 1987), 120-128, 205-210.

⁶⁶ Helmuth von Moltke, *On the Art of War: Selected Writings*, trans. by Daniel K. Hughes, Harry Bell, ed. by Daniel Hughes (New York: Presidio Press, 1993), 24-26, 36, 44-47, 98-102, 107-108.

linear logic failed to elevate logistics equivalently with tactics or strategy. It may also have contributed to the ad-hoc logistical execution which ultimately undermined Germany's Schlieffen Plan in World War One and blitzkrieg maneuver warfare in World War Two. Subordinating logistics fueled the unrealistic assumption that logistical ingenuity would support maneuver warfare because it had to.⁶⁷ In reality, logistical assumptions repeatedly undermined German tactical superiority because they ignored the artful if mundane details of logistics as movement.⁶⁸

The lack of logistics equivalency from Moltke may have been a product of how he studied Clausewitz. For Clausewitz, nations achieved decisiveness by enabling an engagement or threatening its possibility through the presence of military power. Predicated on a principle of polarity between belligerents, a decision lay not in the offense or in the defense but in the concentration of forces in time and space to create conditions of superiority. By the end of the 19th century, the thinking on decisiveness relied less on movement context and more on movement calculation to support combat.⁶⁹ For practitioners like Moltke, this meant using tactical tools was more important than providing for them: combat forced decisions, not movement.⁷⁰ Of course, this undermined a more meaningful understanding of complexity and superiority.

Concerning complexity, rapid technological and socio-economic changes enabled logistics to exert more influence over effective tactics and strategy into the 20th century. Movement became increasingly multidimensional and interdependent with the fight, both

⁶⁷ Gerhard H. Gross, *The Myth and Reality of German Warfare: Operational Thinking from Moltke the Elder to Heusinger* (Lexington, KY: University of Kentucky Press, 2016), 215-217.

⁶⁸ Douglas Porch, *The Path to Victory: The Mediterranean Theater in World War Two* (New York: Farrar, Straus, and Giroux, 2004), 371, 376.

⁶⁹ Clausewitz, *On War*, 81-84, 180-182, 194-197, 204-206.

⁷⁰ Charles R. Schrader, *United States Army Logistics: 1775-1992, An Anthology (In Three Volumes)* (Washington, DC: US Army Center of Military History, 1997), 22-24.

hallmarks of complex adaptive systems..⁷¹ Regarding superiority, the sought-for decision lay less and less in forcing an outcome through combat. Rather, it progressively relied upon creating and controlling a sustainable logistics advantage over an adversary to deter it. With superior logistics, one nation could compel or coerce a favorable decision without fighting. As a result, warfare became more than a decisive engagement to achieve a political aim. It also became the creation of options for moving and exerting military power to control advantage or conflict duration..⁷² The decision sought by Clausewitz and Moltke via superiority therefore manifested in logistics' overlap with tactics and strategy, not in its subordination.

Elements of Cold War deterrence theory capture the logistical, tactical, and strategic overlap well. Bernard Brodie argued relative superiority exists not just within an initial combat capability but in sustaining a capability to strike under threat..⁷³ Moreover, Thomas Schelling argued victory comes from a breadth of options to force compliance from an adversary and not necessarily cause their destruction..⁷⁴ Under threat of nuclear annihilation, deterrence theory demonstrates it is more than the threat of fighting which compels strategic success. Success also requires a sustained threat of logistics..⁷⁵ Linking logistics to tactics and strategy is especially important when exhaustion, not attrition, more commonly achieves political ends in wars between great powers..⁷⁶ The annihilation imagined by nuclear war is unlikely when adversaries would rather seek to over-extend enemy militaries and make them commit to long wars to achieve aims.

⁷¹ Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity; A Platform for Designing Business Architecture*, 3rd ed. (Amsterdam: Morgan Kaufmann, 2011), 29-32, 38-47.

⁷² Johnathan Hearn, *Theorizing Power* (New York: St. Martin's Press LLC, 2012), 6-7, 209-217.

⁷³ Bernard S. Brodie, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1991), 282, 313.

⁷⁴ Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960), 8, 16, 34.

⁷⁵ Eric Hobsbawm, *On Empire: America, War, and Global Supremacy* (New York: Pantheon Books, 2008), 10-13, 17-24.

⁷⁶ Cathal J. Nolan, *The Allure of Battle: A History of How Wars Have Been Won and Lost* (New York: Oxford University Press, 2017), 572-582.

In modern great power competition, logistics succeeds by creating options which can change an adversary's behavior. As a rheostat rather than a switch, movement must necessarily shape US Army operational concepts.⁷⁷ More broadly, all-domain logistics must consider movement in relation to strategy and a general plan of operations, not just how it can support an army's tactics.⁷⁸ Unfortunately, soldiers still seek to subordinate logistics, approaching movement in Vegetius-like fashion. Until the US Army also seeks to understand movement's complex interaction, soldiers will continue to rely on logistical reaction rather than pursue its advantages.⁷⁹ As movement becomes more contested, MDO must embrace logistics' complexity to avoid the deceptive comfort of a TPFDD. Movement thinking should reappraise the wisdom of Jomini's analysis and Clausewitz's caution, where logistics is thought of more holistically with tactics and strategy. Only together can an army set conditions for the decision. And as history reveals, holism helps the US Army create a range of options. Even if it tries everything else first.

Throwing Gauntlets

Global conflict, motor transportation, and mechanization presented a new context for holistic thinking in the 20th century. When nations threw down their gauntlets for world wars, transcontinental movement requirements made logistics a key to success.⁸⁰ World War Two ultimately boiled logistics down to its essence: it was "the stuff that if you don't have enough of, the war will not be won as soon as."⁸¹ The US Chief of Naval Operations at the time captured the

⁷⁷ Douglas C. Lovelace, Jr., Steven Metz, *Nonlethality and American Land Power: Strategic Context and Operational Concepts* (Carlisle Barracks, PA: US Army Strategic Studies Institute, 1998), 31-34.

⁷⁸ Furse, *The Art of Marching*, 137, 186-187.

⁷⁹ Martin van Creveld, *Supplying War: Logistics from Wallenstein to Patton* (London: Cambridge University Press, 1977), 1-3, 231-237.

⁸⁰ Michael R. Matheny, *Carrying the War to the Enemy: American Operational Art to 1945* (Norman, OK: University of Oklahoma Press, 2011), 100-105, 108-137.

⁸¹ Julian Thompson, *The Lifeblood of War: Logistics in Armed Conflict* (London: Brassey's, 1991), 3.

sentiment more bluntly: “I don’t know what the hell this logistics is that [Chief of Staff of the US Army George] Marshall is always talking about, but I want some of it.”⁸² World wars made logistics indistinguishable from strategy; logistics *was* strategy.⁸³ But that did not mean senior leaders understood it. Often, US Army leaders ignored logistical planning to focus on strategic and tactical considerations, making decisions and unmaking them with great consequence.⁸⁴

To deepen its logistical understanding, the US War Department studied how “the military potential of a nation is directly proportional to the nation’s logistic potential.” The Department realized abundant resources, large industrial production, geographic isolation, and adequate mobilization time created the opportunity for the United States to achieve *logistics superiority* in both world wars. But it also cautioned leaders “must have a thorough appreciation and knowledge of the subject” because “no enemy will make the same mistake a third time.” Reacting to lacking logistics doctrine and complicated supply relationships between theaters and agencies, the US War Department concluded “wars cannot be won without logistic superiority.”⁸⁵ Regrettably, the post-war environment supplanted this hard-learned logistics lesson. The United States wanted a peace dividend, not the high cost of sustaining a massive mobilization, acquisition, infrastructure, and distribution system.⁸⁶ Under fiscal constraints, the military focused instead on combat readiness in case of nuclear war.⁸⁷ This is not to say the US Army failed to value sustaining the force as much as employing it. Rather, soldier competence focused on a war of annihilation from

⁸² John E. Wissler, 4 October 2018, “Logistics: The Lifeblood of Military Power,” The Heritage Foundation, Military Strength Topical Essays, accessed 15 February 2021, <https://www.heritage.org/military-strength-topical-essays/2019-essays/logistics-the-lifeblood-military-power>.

⁸³ US War Department, *Logistics in World War II: Final Report to the Army Service Forces* (Washington, DC: Government Printing Office, 1947), viii, 32-33.

⁸⁴ Richard M. Leighton, Robert W. Coakley. *Global Logistics and Strategy, 1940-1943* (Washington, DC: US Army Center of Military History, 1995), 455.

⁸⁵ US War Department. *Logistics in World War II*, 244-252.

⁸⁶ Alan Gropman, *The Big L: American Logistics in World War II* (Washington, DC: National Defense University, 1997), xiii-xviii.

⁸⁷ Hanson W. Baldwin, *Power and Politics: The Price of Security in the Atomic Age* (Claremont, CA: Claremont College, 1950), 81-117.

stand-off ranges, not movement to a limited war of exhaustion in contact.⁸⁸

Unfortunately, such erosion of logistical competence led to a United Nations mission in Korea initially wanting for superiority. Lacking an initial movement focus in 1950, Korean War planners had to adapt to self-induced friction. Problems appeared at the all too familiar nexus of transoceanic distances, few ports, and lacking distribution networks. Each problem combined to slow initial combat support and movement options, exacerbating shortfalls in the region's production, stockpiles, and access.⁸⁹ The Korean War highlighted how fear of nuclear destruction dispersed troops and supplies but lacked an equal investment into understanding dispersed logistics. Where conflict below the threshold of nuclear war was more likely, the result became reduced readiness for any conflict other than nuclear war.⁹⁰ Initial failures forced the US to relearn how uneconomic shipping, unorganized transportation, and uncontrolled supplies create waste and undermine both tactical and strategic success. As a result, the US Army's conclusions after the conflict echoed those from World War Two: the military needed to understand and coordinate its movement more thoroughly.⁹¹ But after Korea, the US military gave primacy to tactics and strategy in a Cold War stand-off. Subordination once again replaced an equivalent value or concept for logistics.

By the time of the Gulf of Tonkin Resolution in 1964, subordination meant the US military left unresolved numerous parochial logistics tensions between services. The result in the Vietnam War was another absence of concerted and preemptive planning for logistics. Organizations and processes were initially insufficient to bring war to an inhospitable jungle, and limited infrastructure investment prohibited meaningful long-term movement planning. While

⁸⁸ Michael R. Matheny, *Origins of Modern American Operational Art* (Ann Arbor, MI: ProQuest, 2007), xii-xix.

⁸⁹ Peppers, *History of United States Military Logistics 1935-1985*, 169-180.

⁹⁰ Harold J. Clem, *National Security Management: Mobilization Preparedness* (Washington, DC: National Defense University, 1983), 67.

⁹¹ Huston, *The Sinews of War*, 623-625, 679-690.

units eventually received the combat support they required, delivery lagged intention and caused even more waste because movement needs languished.⁹² Not until Operation Urgent Fury in Grenada did the US military reflect on movement failures in a meaningful way. While the 1983 operation ended successfully, it suffered from a lack of logistics-informed planning or decision-making. The absence of logistics forethought fueled ad-hoc reaction and led to the misapplication of already vague and contentious logistics doctrine between services. Incompatible equipment and procedures made this lack of synchronization worse.⁹³ Senior leaders repeatedly underestimated the value of logistics for both tactical and strategic success, degrading logistics in Grenada from potential arbiter of opportunity to reactionary “rucksack war.” Tactical and strategic decisions both affected logistics and were affected by it.⁹⁴

Viewed through the long shadow of disaster from 1980’s Operation Eagle Claw in Iran, Congress eventually demanded the US Army make better logistics decisions to prevent movement failures. As a result, the Goldwater-Nichols Act of 1986 elevated logistics as a critical equity by forming USTRANSCOM. But USTRANSCOM’s first major combat experience, Operation Desert Storm, only entrenched a view of logistics as support because of its overwhelming and deceptive success. During that conflict, USTRANSCOM moved over 500,000 personnel but had 161 days to prepare without enemy resistance and with global support.⁹⁵ Foreign-flagged sealift shored-up insufficient capacity, and robust distribution infrastructure in

⁹² Peppers, *History of United States Military Logistics 1935-1985*, 201-204, 221-229.

⁹³ Jerome G. Edwards, Michael A. Anastasio, Gilbert S. Harper, Michael E. Simmons, *Grenada: Joint Logistical Insights for “No-Plan” Operations* (Cambridge, MA: National Security Program Discussion Paper, Series 89-05, 1989), v-viii, 16-18, 61-63.

⁹⁴ Edgar F. Raines, Jr., *The Rucksack War: US Army Operational Logistics in Grenada, 1983* (Washington, DC: US Army Center of Military History, 2010), 542-544.

⁹⁵ James K. Matthews, Cora J. Holt, *So Many, So Much, So Far, So Fast: US Transportation Command and Strategic Deployment for Operation Desert Shield / Desert Storm* (Washington DC: Research Center, US Transportation Command and Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1996), 1-4, 227-230.

Saudi Arabia ensured tactical movement options.⁹⁶ While Operation Desert Storm allowed planners to arrange logistics in permissive time and space to support combat, it had numerous movement luxuries which are no longer relevant. The danger of the experience lay in what it taught USTRANSCOM and the US Army about logistics' role today.

For USTRANSCOM, the lesson was a system of rate structures and cost thresholds can manage the movement of any force to any place with enough money and time. Today, USTRANSCOM continues to stress the strength of commercial augmentation as a viable means to overcome its organic supply chain deficiencies.⁹⁷ But in a truly contested fight, commercial options will be too expensive, too degradable, too slow, or too ineffectual to be realistic. The exponential growth in information requirements only exacerbates the threat of disruption because logistics' data is more vulnerable to attack.⁹⁸ As a result of the business-like evolution in global reach for US military forces, USTRANSCOM now lacks a conceptual purpose to sense and respond to logistics needs in a more contested environment context. Today, the military views the idea of *logistics superiority* almost exclusively in terms of compressing TPFDD timelines, not creating options.⁹⁹ This drives the US Army to focus more on efficiency than adaptation, leading planners to protect assets instead of expanding movement access.¹⁰⁰

⁹⁶ US Air Force Logistics Management Center, *The Logistics of Waging War: A Historical Perspective* (Maxwell Air Force Base, AL: Air Logistics Management Center, 2000), 223-231.

⁹⁷ Eric Pletz, Marc Robbins, *Leveraging Complementary Distribution Challenges for an Effective, Efficient Global Supply Chain* (Santa Monica, CA: RAND Corporation, 2007), 49-52.

⁹⁸ Don Snyder, Elizabeth Bodine-Baron, Mahyar A. Amouzegar, Kristin F. Lynch, Mary Lee, John G. Drew, *Robust and Resilient Logistics Operations in a Degraded Information Environment* (Santa Monica, CA: RAND Corporation, 2017), 47-48.

⁹⁹ Robert S. Tripp, Mahyar A. Amouzegar, Ronald G. McGarvey, Rick Bereit, David George, Joan Cornuet, *Sense and Response Logistics: Integrating Prediction, Responsiveness, and Control Capabilities* (Santa Monica, CA: RAND Corporation, 2006), xvii-xxii, 1-5.

¹⁰⁰ John Gordon, IV, John Matsumura, Anthony Adler, Scott Boston, Matthew E. Boyer, Natasha Lander, Todd Nichols. *Comparing US Army Systems with Foreign Counterparts: Identifying Possible Capability Gaps and Insights from Other Armies* (Santa Monica, CA: RAND Corporation, 2015), 57-62.

For the US Army, soldiers remember Operation Desert Storm as the “100-hour ground war,” not by its air campaign and global movement prequel, Operation Desert Shield, or its strategic fulfillment and redeployment sequel, Operation Desert Farewell. It was the logistics effort before and after combat that kept US strategic promises with allies and partners. This is not logistics as support but logistics as movement to be as equally decisive as tactics for achieving strategy.¹⁰¹ Operation Iraqi Freedom only deepened the US Army’s poor understanding of itself in relation to its expeditionary environment. Even under permissive circumstances, the US Army lacked an integrated purpose for its supply chain. And without a higher significance for movement, the US Army repeatedly risked both tactical and strategic success.¹⁰² As history shows, logistics is often critical to determining how militaries can accomplish their tactics and achieve their strategy.¹⁰³ But concepts like MDO show the US Army still makes a habit of relearning its own history.

Holding Court

Given the preceding discussions on theory and history, a reasonable deduction is that logistics requires greater equivalency to tactics and strategy. The concern is MDO and LSCO concepts hold court in US Army thinking, and they emphasize combat. Whether intentional or not, a focus on the fight creates a more logistics-indifferent mental framework vulnerable to shock. And a relevance gap between the perception of logistics and its reality creates conditions for fundamental surprise.¹⁰⁴ The US Army extends the gap with logisticians trained to focus on

¹⁰¹ US Air Force Logistics Management Center, *The Logistics of Waging War*, 223-231.

¹⁰² Eric Peltz, Marc L. Robbins, Kenneth J. Girardini, Rick Eden, John M Halliday, Jeffrey Angers, *Sustainment of Army Forces in Operation Iraqi Freedom: Major Findings and Recommendations* (Santa Monica, CA: RAND Corporation, 2005), 107-114.

¹⁰³ Jereon Hall, “Logistics and Strategy” (School of Advanced Military Studies monograph, US Army Command and General Staff College, Ft. Leavenworth, KS, 2014), 4-8, 42.

¹⁰⁴ Zvi Lanir, *Fundamental Surprises* (Ramat Aviv, Israel: University of Tel Aviv Center for Strategic Studies, 1984), 15-16, 31-32.

support. Some concentrate on calculating optimal “tooth-to-tail ratios” which quantify the provisioning of combat troop requirements.¹⁰⁵ Others merely subordinate logistics because it “lacks the drama of combat.”¹⁰⁶ Both misguide US Army thought because neither help leaders who lack schooling or experience in theater logistics to understand actual wartime movement requirements.¹⁰⁷ Worse, leaders that have training focus tactically, expressing logistics’ primary problems as transactional: in-transit visibility, supply, maintenance, transportation management, and movement control.¹⁰⁸ The soldier is conditioned to view movement as a boring precondition to fighting. The result is an army which accepts knowable unknowns because it prefers to study strategy and tactics, not logistics.¹⁰⁹

This is not to say tactical considerations do not matter; they do. But the distinction is not whether tactics drives logistics or vice versa. The distinction is that there is none. Fighting and movement constantly interact. One is not primary because such a distinction automatically subordinates the other. The US Army believes it can control and measure logistics’ parts so it does not have to reconcile logistics’ whole. Unfortunately, this ignores the obvious growth in movement’s contextual complexity and importance. Logisticians only complicate the problem by embracing subordination. Tactical efforts to “out supply, out distribute, out repair, and out service the enemy”¹¹⁰ fail when logistics is viewed exclusively through the lens of support. An uncertain future requires planners to wrestle with questions of logistics’ purpose, not just logistics’

¹⁰⁵ John J. McGrath, *The Other End of the Spear: The Tooth-to-Tail Ratio (T3R) in Modern Military Operations* (Ft. Leavenworth, KS: Combat Studies Institute Press, 2007), 1-8.

¹⁰⁶ John A. Lynn, *Feeding Mars: Logistics in Western Warfare from the Middle Ages to the Present* (Boulder, CO: Westview Press, Inc., 1993), vii, 3-7.

¹⁰⁷ Schrader, *United States Army Logistics: 1775-1992*, 779-785.

¹⁰⁸ Jack C. Fuson, *Transportation and Logistics: One Man's Story* (Washington, DC: US Army Center of Military History, 1994), 193-200.

¹⁰⁹ Leighton, Coakley, *Global Logistics and Strategy, 1940-1943*, 455.

¹¹⁰ Bobby R. Pinkston, “Logistics and Nonlinearity: A Philosophical Dilemma” (School of Advanced Military Studies monograph, US Army Command and General Staff College, Ft. Leavenworth, KS, 1996), 25-32.

measurable parts. This means a conceptual reimagining of logistics is not just a change in degree of support but a change in kind for movement.

Reimagining is necessary for the US Army to reject any self-imposed notion which believes logistics is less “glamorous” than tactics or strategy.¹¹¹ Instead, logistics should be viewed as the mechanism for a more functional integration of joint effects.¹¹² Fortunately, joint force leadership is grooming a new all-domain paradigm which can elevate logistics’ equivalency. Paradigm shifts like this are meant to reconcile concepts like MDO with their contextual anomalies. As a shift from counter-insurgency, low-intensity, and other-than-war conflict over the preceding decades, the all-domain paradigm establishes the need for a new set of conventions.¹¹³

Paradigm shifts in US Army logistical thought are not without precedent, but they do lack meaningful results. A recent example is the “velocity management paradigm” introduced in the 1990s to respond to increasing global volatility. To minimize risk under uncertain conditions, the concept rightly prioritized responsiveness in processes rather than supplied products.¹¹⁴ But while it elevated the activity of delivering mass over measuring delivered mass, it failed to go beyond a tactical, support-only frame. Another attempted shift focused on “logistics transformation,” which leaned into combat’s primacy by seeking to define logistics with tactical characteristics, not with aspects of its own nature.¹¹⁵ This paradigm shift failed because it did not actually shift the paradigm. By subordinating logistics as support, these concepts show the US Army focuses

¹¹¹ Thompson, *The Lifeblood of War*, 340-341.

¹¹² Schrader, *United States Army Logistics: 1775-1992*, 789-795.

¹¹³ Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 4th ed. (Chicago: University of Chicago Press, 2012), 77-91.

¹¹⁴ Mark Y. D. Wang, *Accelerated Logistics: Streamlining the Army’s Supply Chain* (Santa Monica, CA: RAND Corporation, 2000), 5-11, 37-45.

¹¹⁵ Derrick A. Corbett, “Logistics Transformation: The Paradigm Shift” (School of Advanced Military Studies monograph, US Army Command and General Staff College, Ft. Leavenworth, KS, 2007), 45-46.

movement on efficiency by compressing time and space. Logistics can become more additive in planning if soldiers instead focus movement on effectiveness across domains with purpose.

Ultimately, logistics' subordination is misaligned for the all-domain paradigm. The term "all-domain" is itself structured for more holistic thought about unity of effort. To change a paradigm for logistics, the US Army must first understand why logistics relates to both the macroscopic potential of strategy and the microscopic application of tactics.¹¹⁶ Emergent all-domain concepts like Joint All-Domain Command and Control are gaining relevance because they help planners explore such comprehensiveness and appreciate functional depth over subordination. Whether conducting LSCO or confronting contested conditions, all-domain is inherently aggregate. Therefore, the true implication of an all-domain paradigm is not just better command and control in the face of complexity. It is also better joint functions. And provisioning logistics is what the joint function of sustainment is all about.¹¹⁷ To succeed in an ambiguous and uncertain future, the US Army must embrace a bigger whole from its functions, not the sum of their parts.¹¹⁸ Only by elevating the significance of logistics can the planner integrate effects across domains, to feed the fight and achieve the strategic aim.¹¹⁹ All-domain thinking means reconciling the conceptual gap between logistics, tactics, and strategy to achieve greater functional unity of effort (Figure 6). This is how MDO can create options, enable synchronization, and empower operations.

¹¹⁶ Kress, *Operational Logistics*, 37-40.

¹¹⁷ Department of Defense, Joint Publication 3-0, *Joint Operations*, III47.

¹¹⁸ Robert Axelrod, Michael D. Cohen, *Harnessing Complexity: Organizational Implications of a Scientific Frontier* (New York: Basic Books, 2000), 7-11, 28-31.

¹¹⁹ Jobie Turner, *Feeding Victory: Innovative Military Logistics from Lake George to Khe Sanh* (Lawrence, KS: University of Kansas Press, 2020), 261-270.

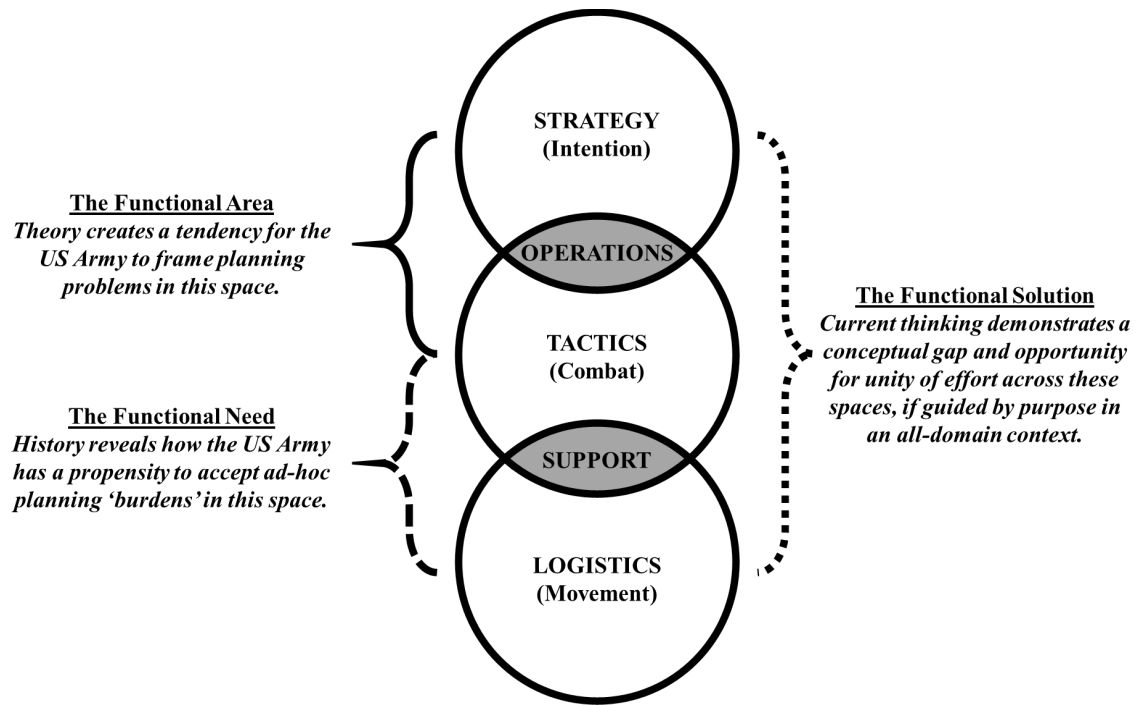


Figure 6. A Conceptual Logistics CBA. Created by author.

My Kingdom for a Concept

The officer who doesn't know his communications and supply as well as his tactics is totally useless.

—General George S. Patton, Jr., US Army

Pure military logistics is the artful consideration of an army's movement. But the US Army limits its consideration to support, where movement is like stage management in a play. Tactics is the acting of various players and strategy is their expression of the play's plot, the aim of the production.¹²⁰ The problem is this metaphor is misleading; pure logistics is more expansive because movement exists beyond the stage. It includes the production's interaction with various operating environments as a travelling show. The point of a play, if it is to be significant, is not just to practice or perform in a single theater. The intent is to export the play's plot to markets both big and small according to the production team's aims. The implication here is not that logistics as support is without value. It is that such a consideration is incomplete. Logistics' value requires a more properly understood context for movement.

The preceding section's conceptual CBA outlined four contextual lessons concerning logistics' significance. First, logistics, tactics, and strategy remain inseparable components of military warfare. A failure to invest in one during relative peace means it must improve hastily in war. Second, unity of effort is difficult with limited resources and all-domain interdependencies. Decisions in modern warfare cannot be isolated from logistics considerations. Third, time and space are luxuries that cannot be assumed. Logistics planning must focus on more than efficiency by having meaning of itself. Fourth, logistics' significance in war is derived by creating options. For logistics to be effective, it must elevate the function of sustainment to synchronize tactical

¹²⁰ George C. Thorpe, *Pure Logistics: The Science of War Preparation* (Washington, DC: National Defense University Press, 1986), xi-xxv, 1-5.

activities and create strategic advantages. These lessons make one thing clear: logistics requires purpose to cohere itself and to best balance tactics and strategy.

Knighting Logistics with Purpose

Purpose can be found by asking ‘why’ something exists. In medieval times, knighting someone meant assigning them a ‘why’: to serve their kingdom. Today, the act of questioning ‘why’ requires understanding ‘what’ something is and ‘how’ it works. For the US Army, the ‘what’ for movement is the logistics system itself, the JLEnt. The method or ‘how’ for employing that system is GIL. That leaves ‘why’ open to interpretation, but it is also the most critical aspect of understanding the value of something.¹²¹ In the all-domain paradigm, the US military must assign a ‘why’ to logistics because it cannot afford to live by ‘how’ and ‘what’ alone. Excluding ‘why’ keeps logistics a transactional problem of physics.¹²² But in classical physics, motion is how a thing balances energy in time and space. Objects transform potential energy into kinetic energy through movement. Applied to the military, the purpose of logistics is to reconcile the potential energy of ‘stuff’ with the kinetic energy of using ‘stuff’ in combat. Wanting for ‘stuff’ heralds failure but arranging access to ‘stuff’ creates options and synchronizes activity. In war, an army must provide ‘stuff’ better than the enemy if it is to succeed. Conceptually, ‘better’ means an army should seek to create potential energy in a superior way, to pursue logistics supremacy.

Logistics supremacy captures the ‘why’ of movement’s existence: to prepare, respond, deliver, and sustain an army when crisis comes. Supremacy is a purposeful goal because it answers the ‘why’ in a feasible way. The term structures meaningful planning and execution of GIL through the JLEnt, and it assigns significance to logistics. It also guides an intentional

¹²¹ Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity*, 33-37.

¹²² Defense Logistics Agency, Logistics Operations, 20 February 2020, “Day Describes ‘Physics of Logistics’ to DoD, Industry Representatives,” Defense Logistics Agency, accessed 15 February 2021, <https://www.dla.mil/AboutDLA/News/NewsArticleView/Article/2088650/day-describes-physics-of-logistics-to-dod-industry-representatives/>.

balancing of logistical capability, capacity, and readiness. The current service chief of the US Army describes this balance as one between range, convergence, and speed.¹²³ But these are traits of systems, not considerations for planning. Range is better understood as overcoming the tyranny of distance, convergence as generating military power, and speed as compressing time. Logistics supremacy therefore balances capability, capacity, and readiness based upon enduring views of distance, power, and time.¹²⁴

First, capability boils down to a calculation of distance: how far can an army move. Much like terrain or proximity dictate whether a car or bicycle are better suited for trip, capability is the mobility of an expeditionary force. It allows planners to understand how they can shape an army's operational reach: the distance and duration across which a force can successfully employ.¹²⁵ Superior capability comes from the quality of a military's logistics system to create breadth. For the US Army, quality concerns the efficient interaction of the JLEnt system and the GIL process.

Next, capacity relates to an application of power: what logistics resources are available to move an army. Much like horsepower dictates how much a car can carry, capacity is how expeditionary a force can be. It allows planners to understand what needs and tools exist to preclude an army's potential culmination: the point at which a force can no longer maintain momentum.¹²⁶ Superior capacity comes from the quantity available in a military's logistics system to create depth. For the US Army, quantity concerns the responsive use of GIL to pursue logistics supremacy.

¹²³ Sydney J. Freedberg, Jr., 18 February 2021, "Army Chief to Navy, Air Force: We've Got 'Speed and Range,'" *Breaking Defense*, accessed 7 March 2021, <https://breakingdefense.com/2021/02/army-chief-to-navy-air-force-weve-got-speed-range/>.

¹²⁴ Furse, *The Art of Marching*, 3-5.

¹²⁵ Department of Defense, Joint Publication 3-0, *Joint Operations*, III38.

¹²⁶ Department of Defense, Chairman of the Joint Chiefs of Staff, Joint Publication 5-0, *Joint Planning* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 1 December 2020), IV28-IV29.

Finally, readiness relates to managing time: how long does an army need to prepare and deliver a force. Much like a car requires time to transit and refuel, readiness is how an expeditionary force mobilizes, stages, and integrates its military power. It allows planners to understand where options are available to establish tempo: the relative speed and rhythm of military operations over time with respect to the enemy.¹²⁷ Superior readiness comes from the access of a military's logistics system to create possibilities. For the US Army, access concerns the opportunity created by preserving the fitness of the JLEnt while pursuing logistics supremacy.

Quality, quantity, and access feasibly affect the other to make movement effective only through balance. To use a quality of capability and a quantity of capacity, an army consumes the possibilities their readiness created. To maintain a quantity of capacity and access to readiness, an army must limit the breadth of their capability. And to expand access to readiness and a quality of capability, an army cannot extend the depth of their capacity. While this description implies balance using doctrinal language, the former dean of the US Army's Logistics University offers a similar view with more intuitive terms. For him, three ideas shape the essence of logistics if movement is to be feasible and effective: connection, fulfillment, and potential.¹²⁸ Connection is about the efficiency possible by aligning logistics in time and space. Fulfillment concerns the responsiveness of logistics aligned in time and purpose. And potential creates opportunity when logistics is aligned in space and purpose.

In both the research's doctrinal interpretation and a lead US Army logistics thinker's view, effectiveness becomes feasible by balancing time, space, and purpose. Balance is not something an army can fabricate after-the-fact. Rather, it is something to make coherent through a clear purpose before a crisis materializes. As General Dwight D. Eisenhower noted in his role as

¹²⁷ US Army, ADP 3-0, *Operations*, 2-8.

¹²⁸ Christopher R. Paparone, George L. Topic, Jr., "Three Fundamental Ideas That Are the Essence of Military Logistics," *Army Sustainment* (May-June 2016: 6, Army Logistics University, VA: Combined Arms Support Command), 6.

Supreme Allied Commander, “you will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics.”¹²⁹ What the US Army needs is a purpose to guide this movement thought, a way for logistics to become effective for tactical and strategic success. Logistics supremacy as logistics’ purpose allows movement to conceptually cohere effectiveness by relating capability, capacity, and readiness together (Figure 7).

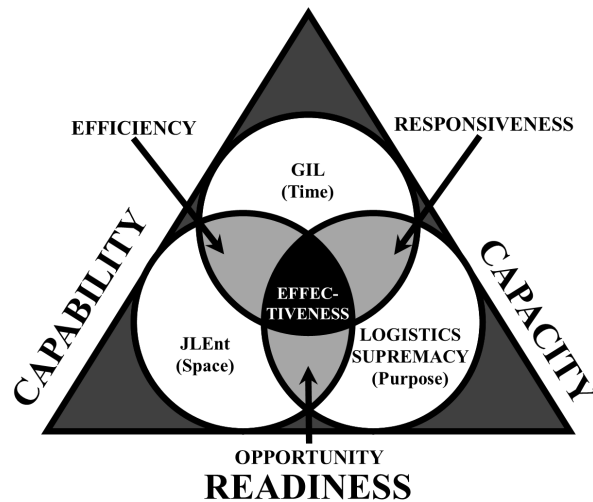


Figure 7. Purpose Feasibly Coheres Logistics. Created by author.

The Quest for Equivalency

Bitter experience shows tactics and strategy best enjoin where “the art of war is the art of the logistically feasible.”¹³⁰ By knighting logistics with purpose, logistics supremacy coheres movement effectiveness in a feasible way. But internal coherence is irrelevant without a practical application. For movement, application lay in how logistics relates to tactics and strategy. The conceptual quest for the US Army is therefore not a journey toward more subordination. Instead, the quest is for logistics’ equivalency. Logistics supremacy informs movement’s equal external relevance because it assigns logistics equal agency.

¹²⁹ Wissler, “Logistics: The Lifeblood of Military Power.”

¹³⁰ US Air Force Logistics Management Center, *The Logistics of Waging War*, 168.

Movement balances logistics with tactics and strategy by linking motion to unity of effort. To expand upon the previous classical physics metaphor, motion is created by GIL through the JLEnt to generate potential energy. Therefore, motion makes logistics the vector for its object, an army. By assigning a purpose to logistics, planners can direct the potential energy of an army in space over time. Tactics becomes the object's force of thrust and strategy its destination. Without a strategic destination, the vector is aimless and the force is pointless. Without power, the vector is meaningless and the destination is immaterial. And when directed campaigns are all thrust and no vector, planning becomes an act of busyness, not purpose. An army injects velocity into a campaign when it uses motion to shape the interdependence of logistics, tactics, and strategy.¹³¹ While logistics supremacy remains an aspirational idea to balance warfare, it provides a clear vector for the four-dimensional movement problems of a campaign plan.

A compelling example of clarity in movement's purpose can be found in the campaign successes of Alexander the Great. He demanded a focus on comprehensive movement planning because he understood logistics influenced both tactical and strategic victories for operations abroad.¹³² Channeling the spirit of Alexander, Rear Admiral Henry E. Eccles rearticulated these movement considerations for the 20th century. Specifically, he expanded the aperture to understand logistics as "controlling all the 'means of war' as appropriate at various levels of command." Eccles concluded the logistics of modern warfare could only harmonize with strategy and tactics if it was treated equivalently.¹³³ For Alexander and Eccles, logistics' purpose was not just support but forming a foundation for tactical and strategic flexibility. The problem is it takes something more than awareness to advocate for movement's relevance. It takes purpose. And

¹³¹ Kenneth Macksey, *For Want of a Nail: The Impact on War of Logistics and Communications* (London: Brassey's, 1989), 1-4.

¹³² Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkeley: University of California Press, 1978), 119-122.

¹³³ Henry E. Eccles, *Logistics in the National Defense* (Harrisburg, PA: Stackpole Company, 1959), 9-11, 15-21.

today, purposeful campaigning requires armies to accept uncertainty with adaptable operations.¹³⁴

To inform adaptability, Eccles' asks an army to consider tactics the immediate direction of power toward a specific objective and strategy the long-term direction of power toward a broad objective. Logistics becomes the flexible provisioning of means to allow the exercise of power for both in controlling uncertainty. In his concept, movement success relies upon command leadership to identify purposeful objectives and aggregate the unity of effort needed between logistics, tactics, and strategy.¹³⁵ Similar to Jomini, Eccles implies only capable leaders can see the need for logistics' equivalency, leaders like General Colin L. Powell who recognize "greater logistics capability than the enemy is a force multiplier."¹³⁶ But given a historical absence of logistics-attuned leadership, the US Army must better codify the purpose behind the short-term and long-term direction of power.

In the short-term and long-term context of logistics supremacy, the purposes of tactics and strategy are better understood as temporal ideas about advantage. For tactics, this means combat is about activity in the present to create advantage. It requires a military to steer change by knowing what was, reflecting on what is becoming, and responding to dynamic contexts. Tactics is skillfully executing and cohering action.¹³⁷ Conversely, strategy is about the future and the pursuit of advantage. It requires imagining change as the manipulation of context to create

¹³⁴ David J. Foster, "Fightn' n' Stuff," in *Buy It, Move It, Sustain It: Generating Solutions Today, Shaping Tomorrow's Logistics, Selected Readings*, ed. by James C. Rainey, Patrick K. Pezoulas, Jennifer A. Manship, 6-14 (Maxwell Air Force Base, Gunter Annex, AL: Air Force Logistics Management Agency, March 1999), 6-10.

¹³⁵ Ibid., 21-22, 37-41, 50-51.

¹³⁶ Colin Powell, *It Worked For Me: In Life and Leadership* (New York: Harper Collins, 2012), 27.

¹³⁷ Donald A. Schön, *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions* (San Francisco: John Wiley and Sons, Inc., 1987), 22-40.

more favorable conditions. Strategy is adeptly shaping and manifesting opportunity.¹³⁸ This places the conceptual space for logistics as an idea about the past. Movement is strategy's antecedent to manipulate contextual rules or principles, creating options by structuring possibilities and military potential. Movement is also tactics' enabler to affect or respond to strategic manipulations. Per joint doctrine, the intentional arrangement of activity in time, space, and purpose is what maximizes the tactical means for decisiveness. This is not logistics as support but logistics as synchronization.¹³⁹ Consequently, movement frames advantage as a temporal problem in the past for tactics' present and strategy's possible future.

By converging temporal considerations, movement makes the multidimensional nature of war more comprehensible.¹⁴⁰ As Machiavelli relates, interpreting the past in the present for a possible future is exactly how nations prepare for war: it is the act of "thinking and doing."¹⁴¹ More specifically, appreciating time is how armies create a more meaningful logistics awareness, one which seeks to have "better convenience of supply" than an adversary.¹⁴² When treated equivalently, logistics enables the combination of movement and fighting to expand strategic options over time.¹⁴³ Therefore, purposeful interaction with tactics and strategy allows logistics to be "the art of defining and extending the possible."¹⁴⁴ In effect, logistics supremacy allows planners to understand time before, during, and after a crisis. An army can think through multidimensional problems faster because movement frames time more elastically. With

¹³⁸ Everett C. Dolman, *Pure Strategy: Power and Principles in the Space and Information Age* (New York: Routledge, 2005), 1-17, 108-113, 187-194.

¹³⁹ Department of Defense, *DOD Dictionary of Military and Associated Terms*, 207.

¹⁴⁰ Gaddis, *The Landscape of History*, 1-8.

¹⁴¹ Niccolò di Bernardo Machiavelli, *The Prince*, in *Classics of Moral and Political Theory*, 3rd ed., ed. by Michael L. Morgan (Indianapolis: Hackett Publishing Company, 2001), 447.

¹⁴² Niccolò di Bernardo Machiavelli, 2011, *The Seven Books on the Art of War*, trans. by Henry Neville, Online Library of Liberty, eBook accessed 18 September 2020 at <https://oll.libertyfund.org/titles/machiavelli-the-art-of-war-neville-trans>.

¹⁴³ Furse, *The Art of Marching*, 2.

¹⁴⁴ Huston, *The Sinews of War*, viii.

elasticity, decision-makers can accept risk, enable surprise, and exploit options more capably to disadvantage an enemy..¹⁴⁵

Manipulating time is also how an army can suitably control the moral, mental, and physical dimensions of an adversary. Per Boyd, the moral dimension represents behaviors and principles which guide interaction and conduct. This closely aligns with how campaign plans bridge strategy with tactics through operations. In MDO, the US Army develops operations to avoid, deescalate, or prevail in conflict as a moral imperative. The physical dimension represents the substance and information of the world in which operations occur. More than support, it is the synchronization between logistics and tactics that actualizes an effect on the environment. In MDO, the act of convergence requires equity between movement and fighting to create an overmatch advantage. The mental dimension represents intellectual activity to adjust to the problems in the physical world. Per the CBA's conceptual gap, this is where logistics needs equivalency to strategy. Adjustment implies change over time and requires an army to understand its past as preparation. Therefore, to create MDO options for policymakers, logistics must be more than the synchronization of tactical activity. Logistics must also be the means to broaden how a nation orients itself for future options. Logistics supremacy is an intentional application of movement to generate options for policymakers..¹⁴⁶ And by understanding the manipulations of war's dimensions over time, an army can suitably plan for unity of effort (Figure 8).

¹⁴⁵ Robert R. Leonhard, *Fighting By Minutes: Time and the Art of War*, 2nd ed. (Coppell, TX: self-published, 2017), 13-15, 17-23, 30-35.

¹⁴⁶ Joseph M. Heiser, Jr., *A Soldier Supporting Soldiers* (Washington, DC: US Army Center of Military History, 1991), 217-224, 244-247.

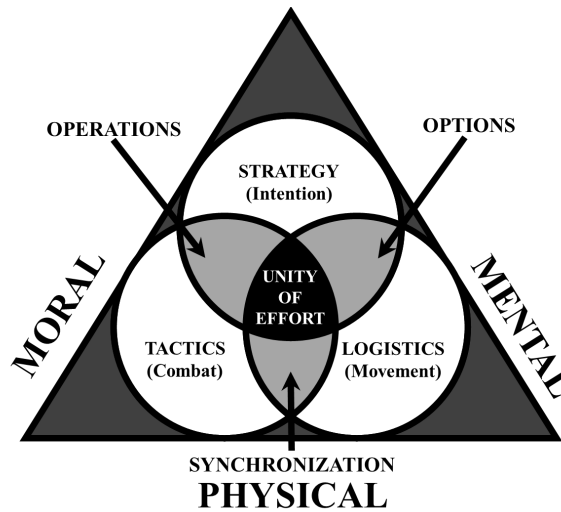


Figure 8. Logistics Suitably Balances Planning. Created by author.

A Knight Errant for MDO

Logistics supremacy serves the nation by better framing complexity, a veritable knight errant adventuring into the conceptual space to help soldiers craft more meaningful plans. Often, the world seems increasingly complex because a concept is lacking to explain it.¹⁴⁷ Any military professional who laments warfare's growing complexity may actually be alluding to their failure to assign a purpose to logistics or treat movement equivalently. If concepts like MDO continue to dismiss the value of movement *and* fighting, they will unnecessarily exacerbate the complexity they seek to understand. Worse, they will continue enabling logistical assumptions and ad-hoc planning to the US Army's detriment. Soldiers must begin to see logistics and tactics as two sides of the same power projection coin for the United States and its strategy.

In potential conflict, an indeterminate zone of vulnerability for MDO shapes conditions for victory. An enemy may possess a movement advantage or even logistical parity for their armies in this zone. In that uncertain transition from competition to LSCO, logistics becomes the purposeful application of movement *as* fighting to set conditions for decisive force employment.

¹⁴⁷ Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity*, 25-27.

Thus, *logistics supremacy* orients thinking for more complete problem framing within MDO. It helps military professionals better articulate and explore their options (and those of their adversaries), before or after a potential crisis inflection point. By recognizing warfare's start in a perpetually contested condition, the concept requires no instigating moment other than the existence of competition. Before a crisis inflection point in a competition's duration, the US Army can disperse vulnerability from its MDO force posture by investing in the creation of overmatch advantages through movement preparations.

As a concept, logistics supremacy helps planners better appreciate the importance of movement preparations under contested conditions to achieve success. If preparations are valued equivalently to tactics and strategy, then an army can strengthen a relative level of *logistics superiority*. With superior logistics, an army can affect a successful transition to armed conflict should a crisis trigger military intervention. And only with superiority can the US Army sustain a decisive force until achieving the military end-state: the set of desired future conditions when an operation ends.¹⁴⁸ The implication for an all-domain fight is the US Army's probability of success is linked directly to the strength of its logistics' before, during, and after a crisis. By assigning purposeful agency to movement, the US Army can design a better conceptual understanding of logistics before it is needed and during the application of operational art.¹⁴⁹ All-domain logistics demands more than the creation of operational art; it requires the creation of *good* operational art. Ultimately, MDO success necessitates a guiding purpose for movement's function: the relentless and tenacious pursuit of logistics supremacy.

Admiral William H. McRaven's relative superiority theory, originally proposed for special operations warfare in the 1990s, provides a compelling reference to visualize the preceding discussion of logistics' role in MDO. In McRaven's model, special operations can

¹⁴⁸ US Army, ADP 3-0, *Operations*, 2-6.

¹⁴⁹ Department of Defense, Joint Publication 5-0, *Joint Planning*, IV1.

achieve relative superiority by arranging key events in execution to ensure mission completion.¹⁵⁰

While his timeline is shorter and the outcome more tactical than warfare itself, it frames a meaningful understanding for all-domain logistics. If the microscopic view is elongated to before a crisis point and time is reframed as the duration of a competition, one can model the want for logistics supremacy (Figure 9). Here, supremacy is not just initial, decisive domination in a crisis. It is a goal which guides planning, to prepare before a crisis and to sustain forces afterward.

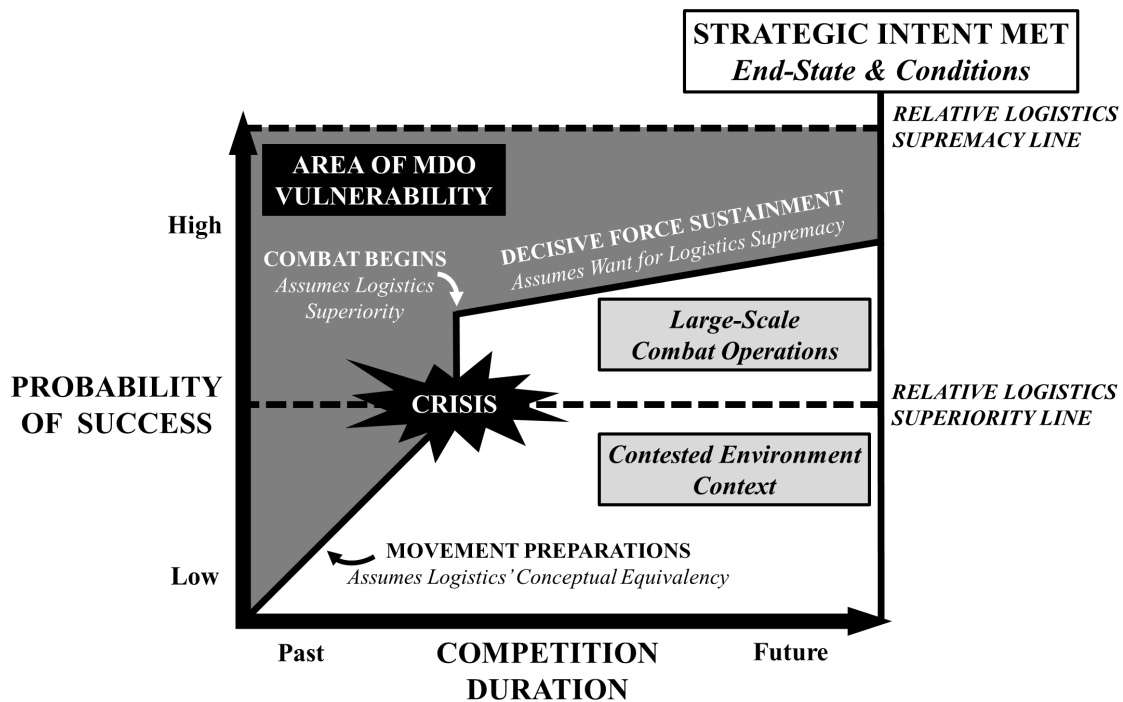


Figure 9. The Want for Logistics supremacy. Created by author.

Here Be Dragons

Logistics supremacy as logistics' purpose is not necessarily a disruptive idea, but it does fly in the face of precedent and logistics' legacy of subordination. It remains odd this legacy endures. Even J. F. C. Fuller noted "one of the strangest things in military history is the almost complete silence upon the problem of supply... It is the very foundation of tactics and

¹⁵⁰ William H. McRaven, "The Theory of Special Operations" (Naval Postgraduate School manuscript, Monterey, CA: Naval Postgraduate School, 1993), 10.

strategy.”¹⁵¹ Like airpower, strangeness occurs when most everything seems to be known yet unfinished.¹⁵² To finish incomplete maps in ancient times, cartographers used to draw dragons and monsters at the frontiers of the known. In much the same way, danger lurks where the US Army holds to antiquated views which only operationalize logistics to support a fight.¹⁵³ Subordination predisposes logistical thinking to problems of time and space, not purpose. Therefore, logistics supremacy is an additive term and concept to finish MDO’s conceptual map.

Embracing logistics’ purpose means the US Army must learn to see the unacceptability of subordinate, ad-hoc movement. If not, logistics will remain whatever becomes an optimal strategic or tactical fit of convenience.¹⁵⁴ The cost is a logistician that knows more about tactics and strategy than a tactician or strategist knows (or cares to know) about logistics. And that is a problem. It creeps into training, wargames, and exercises via the familiar hand-wave which seeks to move beyond movement and focus on combat. It grows from the US Army’s reliance upon a forward, global presence to postpone hard deployment and distribution decisions.¹⁵⁵ The US Army cannot hand-wave complex problems of logistics in the contested environment because they are already present. Logistics supremacy allows the US Army to immediately balance MDO with movement. Purpose empowers soldiers to move “as rapid as possible” within an endless minutia of complex detail because purpose un-subordinates movement.¹⁵⁶ And empowerment is critical; complexity abounds for the US Army’s future, especially in technology and alliances.

¹⁵¹ J. F. C. Fuller, “Preface,” in *Supply in Modern War*, written by G. C. Shaw (London: Faber and Faber, 1934), 9.

¹⁵² Colin S. Gray, *Airpower for Strategic Effect* (Maxwell Air Force Base, AL: Air University Press, 2012), 267.

¹⁵³ Kress, *Operational Logistics*, 1-8,17-35.

¹⁵⁴ Matthew B. Reuter, “Optimizing the DoD Supply Chain for the Future Joint Force” (Joint Advanced Warfighting School manuscript, Norfolk, VA: Joint Forces Staff College, 2013), 57-59.

¹⁵⁵ Kim Hjelmgaard, 25 February 2021, “‘A Reckoning is Near’: America Has a Vast Overseas Military Empire. Does It Still Need It?” USA Today, accessed 7 March 2021, <http://www.usatoday.com/in-depth/news/world/2021/02/25/us-military-budget-what-can-global-bases-do-vs-covid-cyber-attacks/6419013002/>.

¹⁵⁶ Furse, *The Art of Marching*, 114, 136.

Concerning technology, a future of robotics, autonomy, additive manufacturing, hyper-sonics, and artificial intelligence will be disruptive for logistics. But purpose can cohere the form of these new logistics technologies within the JLEnt system and its GIL process. Purpose helps an army acknowledge it cannot out-predict tactical trends or guide technology's development without a clear understanding of movement's function.¹⁵⁷ Therefore, logistics supremacy frames immediate considerations for JCIDS technology development decisions because it empowers the use of movement to confront complexity. Complexity extends to the geopolitics of alliances and their logistics as well. In future conflicts, the US Army may have to rely upon other nations' movement and lift assets. Therefore, multinational dialogues require purpose to identify opportunities for investment into a greater logistical breadth, depth, and access across security negotiations, defense pacts, and partnerships. Through logistically-informed agreements, the US Army can help policymakers create a greater logistical whole against great power competitors. But without a clear purpose for logistics, the US Army may learn too late it cannot move alone.

Ultimately, clarity requires J4 to promote and apply movement's broader context to future joint logistics concepts and doctrine. By developing ideas focused on purpose and not just time or space, J4 can avoid the easy temptation to refine descriptions of the contested environment or focus combatant commands on TPFDDs. Logistics supremacy helps J4 better align the joint function of sustainment for an all-domain future. It also better shapes whole-of-government discussions for infrastructure investment. And while MDO is the US Army's current concept to action an all-domain processes of thought, it does not mean MDO is complete. All-domain logistics requires purpose to reconcile perception with reality in planning, to realize a more complete paradigm which blends deliberate ideas with emergent ones.¹⁵⁸ Without purpose,

¹⁵⁷ Keith R. Beurskens, *The Long Haul: Historical Case Studies of Sustainment in Large-Scale Combat Operations* (Ft. Leavenworth, KS: Army University Press, 2018), 200-204.

¹⁵⁸ Henry Mintzberg, *The Rise and Fall of Strategic Planning: Reconceiving Roles for Planning, Plans, Planners* (New York: The Free Press, 1994), 1-34.

all-domain logistics' conceptual value to tactics and strategy will continue to languish like dragons on the edge of a map. Logistics supremacy fills the conceptual gap created by logistics' missing purpose. The term and concept applies motion to enable unity of effort, cohering movement with logistics and structuring equal relevance to tactics and strategy (Figure 10).

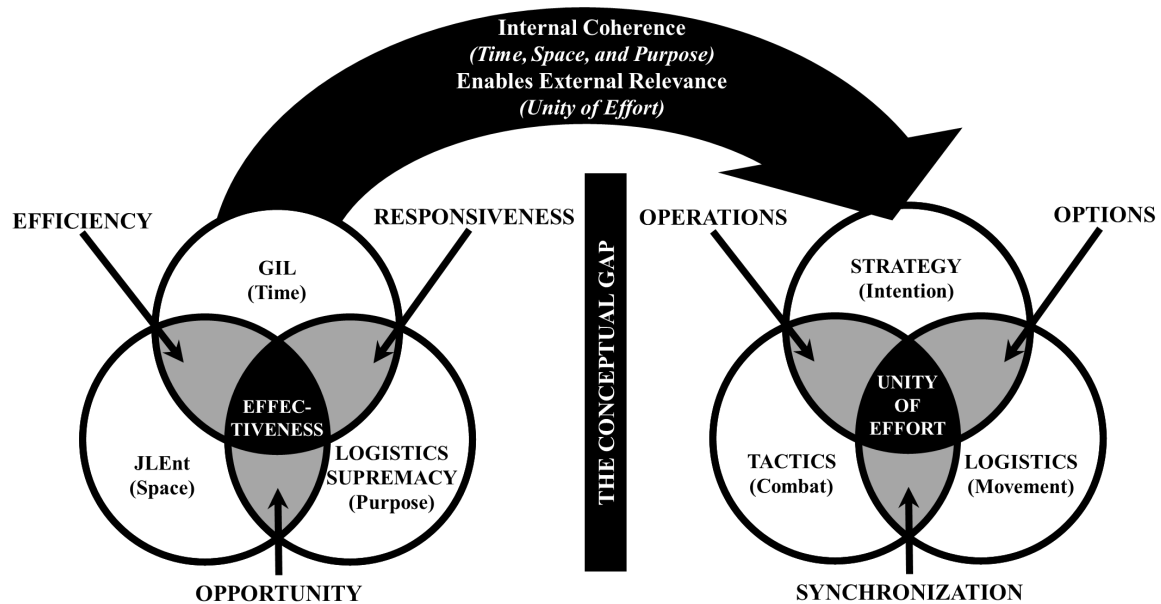


Figure 10. The Value of Logistics supremacy. Created by author.

Till Kingdom Come

Whatever else [war] is, so far as the United States is concerned, it is a war of logistics.

—Admiral Ernest J. King, US Navy

At its core, logistics is about getting something of value to where it is valued in time to remain valuable. Too often, logistics becomes a pick-up game. The US Army waits to correct movement assumptions till the United States must come, so soldiers focus time on their comfort zone: the potential problem of fighting. Unfortunately, this mindset ignores the equivalent problem of movement. As time available to mass military power condenses and space to deploy expands, minor delivery failures will portend greater consequences. The US Army cannot be “for want of a nail” if it is to prevail in great power competition or LSCO. And while it remained a Sisyphean task in these pages to capture the totality of logistics theory, one thing is clear. In war, “you must win through superior logistics.”¹⁵⁹ The time has come for the US Army to correct its doctrine and acknowledge its combat bias discounts the equal role of movement. In the contested environment, soldiers must now focus on fighting *and* moving. And by pursuing supremacy as logistics’ purpose, the US Army can best balance movement with tactics and strategy to create all-domain overmatch.

As a concept, logistics supremacy outlines a coherent and relevant purpose for the US Army to cross its all-domain Rubicon and refine MDO. Coherence comes from feasibly relating the time, space, and purpose which inform logistics’ effectiveness. Logistics supremacy does this by allowing planners to link the capability, capacity, and readiness of military logistics systems to their breadth, depth, and access. Relevance comes from suitably relating logistics with tactics and strategy to empower unity of effort. Logistics supremacy does this by elevating the temporal

¹⁵⁹ Tom Peters, 28 February 2001, “Rule #3: Leadership is Confusing as Hell,” Fast Company, accessed 22 September 2020, <https://www.fastcompany.com/42575/rule-3-leadership-confusing-hell>.

considerations of logistics' past, tactics' present, and strategy's future within the moral, mental, and physical dimensions of war. Without greater coherence and relevance for movement going forward, all-domain planning will lack balance. And without balance, logistics will continue to be late-to-need and potentially catastrophic. Like Hernán Cortés or Ṭāriq ibn Ziyād, the US Army must burn any MDO ideas which perpetuate movement's subordination. Only then can military planners commit to the hard work of planning all-domain logistics with purpose.

Purpose is what confronts the ignorance which breeds from movement's neglect. Logistics supremacy overcomes ignorance because it allows the US Army to view logistics as more than combat support but as movement to shape warfare's volatile causality. Purposeful movement can create options and empower military planners to generate multiple dilemmas. It makes operational reach, culmination, and tempo equal considerations in planning, to organize and employ forces under the most advantageous conditions possible.¹⁶⁰ Today, ignorance is believing the US Army needs more things to fight with instead of more ways to fight. But as Clausewitz acknowledged, once a soldier confronts the limits of their imagination, they cannot easily retreat back into ignorance.¹⁶¹ An interwar Lebanese-American poet captured the sentiment more expressively in the context of modern war: "In the house of Ignorance, there is no mirror in which to view your soul."¹⁶² Logistics supremacy is more than what movement provides or how logistics provides it; it is the 'why' which gives meaning to movement. As a term and a concept, it is the mirror through which the US Army can finally view its logistical soul.

In this research, MDO framed how the US Army currently lacks a clear expression of

¹⁶⁰ Department of Defense, Joint Publication 3-0, *Joint Operations*, I13; US Army, Army Doctrine Publication 3-0, *Operations*, 2-1.

¹⁶¹ Clausewitz, *On War*, 593.

¹⁶² Kahlil Gibran, *The Treasured Writings of Kahlil Gibran*, trans. by Anthony R. Ferris, ed. by Martin L. Wolk, Andrew D. Sherfan (Edison, NJ: Castle Books, 1965), 843.

logistics' purpose. By understanding relevant terms for MDO, the research proposed a logistics supremacy definition. Because logistics supremacy is also a novel expression of an idea, the research then examined the term conceptually. It did this by deconstructing and then clarifying the language of movement in LSCO and contested environment contexts. Next, the study explored how current logistical language creates a conceptual gap. Specifically, the research outlined a legacy of movement's subordination across theory, history, and doctrine. It found logistics supremacy a feasible and suitable concept to clearly express logistics' purpose. And with clarity, soldiers can better frame campaigns and focus time on their uncomfortable zone: the likely problem of movement.

In the all-domain era, movement is what allows the US Army to converge effects and create overmatch. Superior logistics, not just tactics, is how the United States remains a super power among great powers.¹⁶³ To make superior logistics, operations require planners who can better balance fighting with movement like the balance found in the natural world. The sun cannot shine on itself just like the river cannot drink from itself. In nature, collaboration reveals purpose: the sun shines and the river quenches for others. Modern war too abides by its nature: a strategic intent alone cannot achieve itself. Military warfare remains the extension of this intent with other means to affect a decision, wherever that decision must occur. 'There' matters, but tactics cannot move of itself. It is not in its nature. Movement takes logistics. And in war, logistics requires the pursuit of supremacy.

¹⁶³ Jason J. Galway, 16 May 2017, "Deputy Secretary of Defense Visits USTRANSCOM," US Transportation Command, accessed 21 September 2020, <https://www.ustranscom.mil/cmd/panewsreader.cfm?ID=BBE56050-5056-A127-5C244AD55FC78EB5>.

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