

USAWC STRATEGY RESEARCH PROJECT

OPERATION IRAQI FREEDOM AND LOGISTICS TRANSFORMATION

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ABSTRACT

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U.S. Army transformation strategy addresses the continuing imperative to change the Army from a Cold War design. Army Logistics transformation has been pursuing five strategies as part of this transformation. One of these key transformational strategies is Distribution Based Logistics (DBL). This concept is a fundamental departure from the logistics doctrine the Army used in Operation Desert Storm. The DBL concept was first used in Operation Iraqi Freedom (OIF). DBL is designed to reduce the size of the logistical footprint by providing equal or better capability through better distribution rather than having units carry large stockpiles of supplies. In effect, it swaps warehousing capacity for frequent, reliable flows of supplies. This was how logistical support for OIF combat operations and the first few months of subsequent stability operations. This SRP assesses the performance of this new logistics paradigm during the combat phase of OIF noting its impact on Army logistical transformation. It concludes with recommendations for improving DBL, and explains how the on going Army logistical transformation can benefit from the lessons of OIF.

OPERATION IRAQI FREEDOM AND LOGISTICS TRANSFORMATION

On 30 March 2004, Congressman Joel Hefley gaveled into order a hearing on logistics lessons from Operation Iraqi Freedom (OIF) and on Army logistics transformation generally. The Congressman was serving as the Chairman of the House Armed Services Committee (HASC) Subcommittee on Readiness. With senior logisticians from each service and the joint community appearing as witnesses at the hearing, Congressman Hefley had two goals in mind: First, he wanted to determine why, after nearly ten years of logistics transformation efforts, commanders still did not have effective total asset visibility (TAV) to support logistical sustainment operations in times of war. Second, he wanted to hear proposed solutions for the way ahead. The Chairman closed his opening remarks bluntly: "I know logistics is hard, but I am not prepared to provide the Department with billions of operations and maintenance funds on systems, processes or ideas that do not move the Department forward."¹ Among the many reasons this hearing was held, the significant operational and tactical distribution problems faced by the United States Army during the initial combat phase of OIF seemed most prominent.

The initial combat phase of OIF was marked by significant logistical challenges that generally exposed distribution system shortcomings at the operational and tactical levels.² These shortcomings were exceptionally perplexing not only because of the risk they posed to the operation and the forces involved, but also because similar problems were identified following Operation Desert Storm, after which Army logisticians spent over a decade in an attempt to effect a Revolution in Military Logistics (RML). The RML focused primarily on transitioning from a supply based to a distribution based logistics system. Enabled by technological enhancements, this new system was supposed to provide TAV on the battlefield and facilitate a much more efficient sustainment process that relied on the operational concept termed Distribution Based Logistics (DBL). The apparent systemic failure of the DBL process during the initial combat phase of OIF is troubling because there is a generally held institutional belief that without an RML there cannot be an overarching Revolution in Military Affairs (RMA).³

This SRP argues that the Army does not currently have an effective battlefield distribution operational concept because of misguided, unstructured, and under-resourced reform efforts in the wake of Operation Desert Storm. In the light of the critical importance of DBL to the Army's transformation effort, the integrity and effectiveness of the Army's current DBL concept will be examined. This analysis considers the perceived failures of operational and tactical distribution functions in both Operation Enduring Freedom (OEF) and OIF. It reviews the Army's logistics transformation efforts following Operation Desert Storm as the point of origin for the current DBL

concept. It then addresses the difficulties the DBL program encountered and assesses the significance of these difficulties for determining a successful way ahead for the Army's logistical transformation. Finally, this SRP concludes with recommendations for the way ahead.

History of Army Logistical Transformation

The critical role of logistics in military campaigns is well documented throughout history. The U.S. military has experienced both the force-multiplying benefits of well-resourced and redundant supply-based logistics systems (post-mobilization WWII and Operation Desert Shield/Desert Storm) and suffered from a dearth of supplies in critical instances (pre-mobilization WWI and WWII and initial force projection into Korea in 1950). Generally, U.S. Army logistics has improved throughout the 20th and early 21st centuries, always relying heavily on the overwhelming U.S. industrial advantage. As we face the challenges of the Global War on Terrorism (GWOT), the U.S. military enjoys an unquestioned conventional logistical advantage over most conceivable enemies. However, this quantitative advantage is not enough. As the Army transforms itself, a critical requirement for joint, expeditionary, sustained full-spectrum operations demands a more precise, agile, and responsive logistics system. Such a system must be distribution-based.

Distribution-Based Logistics (DBL) is designed to provide limited inventories to cover small disruptions in the distribution flow with enough on-hand supplies to cover consumption between replenishments. DBL relies primarily on frequent, reliable distribution rather than on large forward stockpiles. This reliance on the supply pipeline and managing the pipeline rather than transporting large stockpiles to the theater of operations, frees up strategic lift and enables commanders to close forces earlier- the critical requirement of Army logistics transformation.⁴ It is the foundation on which all of Army logistics transformation is built.

Field Manual #1, The Army, directs that "Army forces must be sustainable across the spectrum of conflict. Sustainability requirements reflect the continuous, uninterrupted provision of combat service support to Army forces. Sustainability in a full spectrum Army will require a combat service support reach capability that allows commanders to reduce stockpiles in theater while relying on technology to provide sustained velocity management and real time tracking of supplies and equipment."⁵ A TRADOC Future Force white paper identifies the desired capabilities of increased deployability, increased throughput at ports, and immediate commencement of operations with reduced operational pauses. Current doctrine and future concepts declare that "projected reductions in sustainment requirements and reliance on

strategic to tactical battlefield distribution will reduce the heavy logistical infrastructures that hampered past operations and constrained responsiveness”.⁶

Joint Vision 2010 first identified focused logistics as one of four primary requirements for future joint operations. The Joint Staff J4’s Focused Logistics Campaign Plan asserted that the current logistics system “lacks the flexibility, agility, mobility, efficiency and interoperability necessary for supporting Joint Vision operations.”⁷ To overcome these deficiencies, the Joint Staff published a Future Logistics Enterprise mid-term vision (2005-2010) that included, as one of six initiatives, end-to-end distribution. This initiative sought to streamline components of sustainment from point of origin to point of end-use. This initiative posited “an integrated, synchronized, end-to-end distribution system to meet war fighter requirements for [logistic] information and materiel.”⁸ This evolving, overarching doctrine indicated that the Army’s plans were progressing in concert with those of the larger joint community.

In order to fully conceive of what the Army’s DBL transformation is pursuing, it is necessary to compare and contrast a supply-based logistics system vis-à-vis a distribution-based logistic system. A supply-based system can be characterized as the “iron mountain” approach to sustainment. This system stockpiles increasingly large, static masses of materiel at each echelon behind the forward maneuver formations. The sheer mass of this system reduces operational risk, but it also burdens the theater commander with an unnecessarily large logistic footprint and wastes precious lift resources both during deployment and redeployment. Such a system inherently lacks agility, precision, and assured responsiveness. The distribution-based logistics system, on the other hand, is designed to respond quickly and precisely to the war-fighting commander by emphasizing distribution velocity and precision, supported by advanced communications, digital information, and decision support tools.⁹ These capabilities ideally provide distribution managers with near-real time information on what supplies are in the system and where thus assist in sustainment decision-making and monitoring of execution.

Lessons Learned in Operation Desert Shield / Desert Storm (ODS)

Saddam Hussein’s invasion of Kuwait in 1990 tested the U.S. Army’s ability to rapidly project combat power and sustain large-scale joint operations. Although the ninety-six hour ground combat phase was viewed as a one-sided victory for U.S. and coalition forces, significant inefficiencies in asset visibility and distribution management were quickly recognized by the Army, the Department of Defense, and the Congress.¹⁰ These inefficiencies would serve as the basis for logistics reform between Operation Desert Storm and OIF.

In their account of Operation Desert Shield / Desert Storm *The General's War*, Gordon and Trainor seem to foreshadow many of the logistics lessons that would be revisited after OIF. CENTCOM Commander General Schwarzkopf identified logistics as one of his main operational challenges. Logisticians and the systems that support them are described as second-class citizens.¹¹ In another observation the authors declared that “The Army’s communications were distressingly fragile for fast paced armor operations.”¹² This comment was repeated nearly verbatim in OIF AARs. The authors went on to caution that declining military budgets for mundane, unglamorous areas of peacetime force structure often lead to critical shortfalls in war.¹³

In *Certain Victory*, General Robert Scales chronicles some of the distribution challenges encountered in ODS. Some of these challenges emerged from weaknesses in doctrine and force structure; others were self-imposed by the combatant commander. The Gulf War highlighted the Army’s institutional focus on the defense of Europe.¹⁴ This retro-focus was demonstrated both in terms of limited long haul tactical transportation assets and the relative dearth of port opening infrastructure in the active Army. Operational planners were tethered to ports and log bases relying on “Iron Mountains” a traditional supply-based sustainment system. On closer examination, it is evident that some of the logistics mass associated with ODS was the direct result of operational commanders’ guidance.

As the crisis deployment unfolded following Saddam’s invasion of Kuwait, combat troops were deliberately sequenced ahead of support troops in the force flow to Saudi Arabia. Cargo documentation detachments were not among the early deploying forces. As a result, port congestion and poor asset visibility stymied preparations for operational sustainment.¹⁵ The command decision to quickly stock a 60 day supply of munitions resulted in the shipment of over 350,000 tons of munitions; in contrast OIF had less than 100,000 tons of munitions.¹⁶ The inefficiency of the operational logistics distribution system resulted from force structure / mission mismatches, poor command guidance, and a lack of a doctrinal organization solely responsible for the distribution process.

LTG Pagonis was designated to be the single operational logistics commander during ODS because of his transportation expertise and his experience with numerous strategic Return Forces to Germany (REFORGER) exercises. Writing in the aftermath of these large-scale operations, LTG Pagonis declared in *Moving Mountains* that “We in the military must sacrifice some measure of efficiency to maintain a higher margin of safety.”¹⁷ This insight is affirmed by military theorist and historian Martin van Creveld: “If the logistic system in question is not to be hopelessly fragile and liable to catastrophic breakdown...a certain amount of redundancy, slack

and waste must not only be tolerated but deliberately built in.”¹⁸ This judgment contrasts with both General Schwarzkopf’s estimate of the situation at the time and those of future senior leaders in the run-up to OIF.

After units returned from the Gulf War, the Army and the Department of Defense reviewed the lessons learned, concluding that even though the war had been a success there were many things that needed to be improved. DOD and the Army noted that future enemies would not give the U.S. six months to build a base before attacking. Therefore our strategic mobility and theater logistics process had to be more responsive. DOD then acknowledged the imperative to transform and modernize. In the logistics arena, four overarching problems were identified: Logistics Force Reception, Limited Logistics Communications, Shortage of Ground Transportation Assets, and Theater Distribution Difficulties.¹⁹ Over the last fifteen years, reforms of these four areas of concern have become the foundation in one form or another for DOD’s and the Army’s logistical transformation concepts.

Logistics Transformation 1991 to 2006

After the Army established the direction for transformation in the early 1990s, it took the Army’s logistical community until the summer of 1998 to generate significant Army-wide discussion and a specific focus on a pending revolution in military logistics, a full seven years into Army’s transformation. The Army had not codified the overall transformation effort until March 1994, when it described the Army of the future as Force XXI and announced the establishment of an experimental force to further develop and test transformational concepts.²⁰

Army Vision 2010 was published three years later in 1997. This vision was nested within Joint Vision statement *Joint Vision 2010*. These two documents introduced a new operational concept, “Focused Logistics,” which was identified as one of the key concepts required for the military to achieve full-spectrum dominance over any and all adversaries. *Army Vision 2010* defined Focused Logistics as “the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while en route, and to deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical level of operations.”²¹

The Army’s vision on Focused Logistics was refined through development of doctrine, training, and experiments conducted in 1998 and 1999- a period of great progress in terms of theoretical work and application of logistical transformation up to that point. The Army G4, the CASCOM Commander and the Commander of Army Materiel Command (AMC) collaborated on an article in *Army Logistician* in 1999 in which they clearly laid out the way ahead for logistics

transformational change. This was the first time the Army's three senior logisticians addressed the logistics community with a unified voice. Companion articles in the same issue identified the Army's focus areas for the next ten years of transformation-designated as the first wave of revolution in military logistics. The Army logistics transformation plan would focus on exploring improvements in automation, communications, and business practices, reshaping command and control relationships to provide better unity of command, and purchasing distribution technologies that facilitated rapid throughput and follow-on sustainment.²²

The Army also designated key concepts needed to frame the efforts in the achievement of Focused Logistics: a seamless logistical system, agile infrastructure, rapid force projection, and an adequate logistics footprint.²³ It is important to note that the Army did not completely match the Joint concept of Focused Logistics found in *Joint Vision 2010*. This dichotomy is significant because it reveals that the Army's and Joint community's priorities were not in synch.

In the first quarter of 2000 General Shinseki changed the direction and context of Army transformation. One of the Army's new focuses would be on the development of an interim force that had the qualities of both light and heavy formations and of a follow on future force whose detailed characteristics had not yet been identified. The future force would be measured in speed and weight; it had to deploy more rapidly and it had to have a greatly decreased logistics footprint.

The Army made a significant adjustment to current ideas for logistics transformation with regard to the interim force, renamed Stryker Brigade, and objective forces. The transformed logistics was marked by a sharply reduced footprint forward; it would facilitate rapid deployments by requiring fewer units to be projected into an area of operation. This smaller logistics footprint would be achieved by means of "reach back" logistics or "Combat Service Support or CSS reach."²⁴ Some claim that this term, while new to the logistics transformation lexicon, was actually not a new concept; rather it was a synthesis of several existing and emerging logistics transformation initiatives such as split-based operations, velocity management, information superiority, and distribution management.

From 2000 to 2002, CASCOM shifted its focus to the development of combat service support strategies and concepts for the Stryker Brigade. Transformation focused on the redesign of the existing Forward Support battalions to Brigade Support Battalions, to include companies organized along the lines of the Force XXI model Forward Support Company. In addition, reforms concentrated on how to actually leverage "CSS reach". These logistics organizations and concepts were tested in the field at the National Training Center in 2002; for the most part, they were found wanting. Significant challenges were noted in providing

sustainment for the brigade. The shortcomings centered on timely delivery of supplies, logistics connectivity, asset visibility, and information fusion.²⁵

In November 2003 the Army published the *U.S. Army Transformation Roadmap*. This document displayed characteristics of previous concepts and doctrine that had been used over the years. The sustainment concept in the Roadmap is characterized by speed, adaptability, flexibility, shared situational awareness and understanding, a logistics Common Operating Picture (COP), and a robust communications info structure.²⁶ This document claims that theater sustainment operations rest solidly on the fundamental concept of distribution-based logistics (DBL). The critical characteristics of DBL include velocity over mass; centralized management with decentralized execution; multimodal execution; maximum throughput; minimum essential stockpiling; seamless two-way flow of resources; in-transit visibility of stocks and supplies; unit and mission-configured loads; real time combat service support (CSS); situational understanding that enables anticipatory logistics; and time-definite delivery. Velocity over mass is the key characteristic; it substitutes the pipeline (inventories in motion) for large inventories stockpiled in-theater. DBL enables the Future Force to employ split basing, freeing up strategic lift providing the commander additional flexibility, optimize reach-back operations, enhance force protection, and reduce the logistical footprint in-theater.²⁷

In 2003 DoD published a new version of logistics transformation. Broad in scope, it has been further refined by the DoD Office of Force Transformation in a new initiative entitled “Sense and Respond Logistics.” This initiative describes a new direction for logistics transformation efforts, described as “a system interwoven with network-centric operations and based upon highly adaptive, self-synchronizing, dynamically reconfigurable demand and support networks that anticipate and simulate actions to enhance capability or mitigate support shortfalls.” This concept borrows heavily from the latest successful commercial business practices and logistics management models.²⁸

This was the status of Army Logistics transformation after 12 years of work and development. The backbone of this transformation was the DBL concept and the development of the enablers to allow Army logisticians to manage the pipeline, rather than build the Iron Mountains of the past. The DBL concept, which was not official Army doctrine yet, was about to be tested by the events of March 2003, Operation Iraqi Freedom.

Current Operations and Lessons Learned

Operation Enduring Freedom (OEF)

The true status of Army logistics transformation could be determined only by performance in the field. Other tests are simply academic: No matter what attempts are made to replicate the real thing, warfare and combat cannot be fully simulated. Both Operation Enduring Freedom (OEF) and Operation Iraqi Freedom are helpful especially in assessing the state of logistics transformation because they represent a level and scale of warfare that is likely to mark U.S. military operations in both the present and future strategic environment.

The key areas that were assessed to evaluate the status of logistics transformation from lessons learned during OEF/OIF are: Logistics communications and data connectivity; the theater distribution system; the force reception process, plan and capability; and the visibility and information sharing capabilities of an integrated supply chain.²⁹

OEF provided a venue to examine the transformational goal of reducing the logistics footprint and executing the concept of DBL. In addition OEF highlighted some issues with regard to combat service support force structure, modularity, deployability, capability, and force balance that must not be overlooked. A key observation in *The U.S. Army's Initial Impressions of Operations Enduring Freedom and Noble Eagle* (August 2003) was that projecting and sustaining a force in a region such as Afghanistan placed a great burden on logisticians to conduct successful sustainment operations. This was no great surprise anyone. However, the report concludes that "a better system needs to be devised to direct and coordinate the resources and forces necessary for this new kind of war."³⁰ This observation does not speak very favorably of our progress in transforming our logistics force or concepts after 12 years of work.

The report identifies several problematic issues. Key among them was the demonstrated lack of reliable long-distance communications equipment to enable the force.³¹ This issue, relevant to all Army forces participating in OEF, meant that the Army logistics systems at the unit level could not communicate in a timely or efficient manner to execute the most basic of logistics tasks- requesting repair parts and resupply by electronic means. This is a glaring problem made more troublesome because it is not a new or surprising one. Logistics transformation clearly had not overcome this fundamental communications challenge.

Other observations from OEF cited a lack of modularity in logistics force structure, which restricted the ability to field a right-sized force tailored to the support mission. Modularity is a key characteristic of the transformed force. Modularity critically enables DBL operations by

limiting the logistics footprint forward and reducing unnecessary requirements for limited strategic lift. Modularity in logistics force structure, a key tenet of Focused Logistics, had not yet arrived.

The Army's official initial report on OEF concludes that while Army logistics forces demonstrated a level of proficiency in sustainment operations, central to that success was a considerable amount of innovation and agility.³² This is impressive, but it does not indicate the Army has transformed its forces, its capability, its concepts, or its thinking. Rather, it affirms a familiar logistics trait: brute force logistics, the old logistics concept that the logistics structure must be sufficiently robust to push anticipated requirements to units as fast as they need it: "Since we can't be sure of what is coming in or when it will get here, we need to make sure we have it on hand and in large quantities."³³ Essentially, this is the Iron Mountain concept used since WWII and during ODS. Brute force logistics, while always required to a certain degree, should be the exception, not the rule. Transformation of logistics had little to do with the success of OEF. Transformed logistics forces or processes did not play a significant role in these operations.

Operation Iraqi Freedom (OIF)

OIF was perhaps even more revealing of the state of Army logistics transformation than OEF. We can compare logistics support in OIF with that of ODS 13 years earlier. But the scope and scale of the Army logistics effort during OIF vastly exceeded that of OEF; at one point in OIF, logisticians supported nearly five full Army divisions and an Army cavalry regiment, one Marine division, an associated corps and Marine Expeditionary Force level headquarters-along with several brigades of corps troops, with a large number of echelon-above-corps or theater-level units. However, the U.S. military, and the Army in particular, had a preexisting forward presence in the region, with nearly unlimited access to world class seaport and airport facilities and an extremely favorable relationship with a willing host nation government that possessed outstanding infrastructure, services, and resources. Finally, there was a very long period of time available, 12 or more months, to conduct operational and logistics campaign planning and preparation of the theater.

Observations regarding logistics during OIF have been mixed. Initially almost all observations about logistics were laudatory. An initial series of positive articles over the summer and fall of 2003 in both service and joint publications reported only success in logistics.³⁴

But we would be mistaken to assume that this praise affirms successful logistics transformation. Success in logistics is indeed measured in battles won or at least in battles not lost due to resupply or sustainment failures. Success in the transformation of logistics, however, must be measured by how effectively DBL is planned and executed. While logisticians made extraordinary efforts to provide the necessary sustainment to make OIF successful, the definition and tenets of transformation and Focused Logistics again were not realized in any significant fashion.

There is another story to OIF logistics that has slowly crept to the surface. It is not quite so flattering. This story tells of problems related to sustainment planning and execution on a serious scale. It is revealed in several “initial observation” studies gathered by the Army from units involved in OIF. It is also addressed by the U.S. Government Accountability Office and affirmed in several recently published books on OIF. The bottom line: We were not as logistically successful in OIF as some may have initially thought or publicly stated.

The logistics challenges faced during OIF became evident when severe food and water shortages in forward combat units were reported by the media within ten days after decisive ground operations commenced. In *Operation Iraqi Freedom: What Went Right, What Went Wrong, And Why*, Walter Boyne claims that “despite all the statements to the contrary, the V Corps and the MEF outran their supply lines, and this not only hampered their forward movement but also exposed them to the possibility of dangerous counterattack.”³⁵

Armies have been outdistancing their supply lines since there have been armies. This is not new. What is troubling is that this familiar problem befell a force that had been working for so many years at transforming its logistical structures, procedures, and policies to support the kind of rapid decisive operations that were planned and executed in Iraq. Transformation aimed to prevent such a shortfall in the continuity of support.

The Army OIF Study Group from the Center for Army Lessons Learned (CALL) conducted a “Quick Look” examination of all aspects of OIF. Their initial report on logistics is damning: “Logistics distribution and management systems, weakened by late deployment of support units, failed to adequately support the requirements of OIF forces”. It continues that the, “Decade-long effort to digitize logistics, adapt business practices and promote efficiency over effectiveness is insufficient for the contemporary operating environment.”³⁶

Anthony Cordesman, a military analyst and Senior Fellow at the Center for Strategic and International Studies, observed in *The Iraq War-Strategy, Tactics, and Military Lessons* that the Army simply did not have enough trucks to support and sustain the long distance supply chain.³⁷ Cordesman’s analysis is accurate, but not complete. The problem was much more complex,

and the failures ran much deeper. The entire distribution system for OIF was never adequately established or validated in the theater of operations. The basic components for a theater distribution system were not in place- especially the required trucks. Neither were the digital enablers for the distribution system, such as mobile, non-line of sight logistics communication capabilities and mobile in-transit visibility systems. Nor were many of the processes fully aligned with DBL concepts, reflecting a lack of supply chain integration and of a common vision of a DBL supply chain.³⁸

No viable plan established theater logistics data connectivity. Even in Kuwait, no robust electronic network was built to interface with the Army's Standard Army Retail Supply System (SARSS). All of the subordinate echelons at brigade level had to call in parts requisitions verbally over a fragile phone network, or in text messages over a satellite based system designed to track movements (MTS), or courier hand-written requisitions back on helicopters or trucks. The concept of TAV also did not work as designed, despite a great deal of initial positive publicity concerning the use of Radio Frequency (RF) Tags and the achievement of TAV by agencies such as the U.S. Transportation Command (USTRANSCOM) and DLA.³⁹

Unfortunately, the system worked only at the strategic level, and only with items able to be tracked on ships or planes en-route to the theater from the United States or Europe. Once items arrived in Kuwait, the Army had nearly zero visibility of these items. The USGAO reported extensively on this: It cited inadequate access to TAV systems within the theater and absence of RF Tag interrogators projected forward as supply lines extended into Iraq, interoperability challenges at different echelons, as well as communications shortfalls and training deficiencies.⁴⁰

OIF logistics, like OEF logistics, was quickly all about improvisation and adaptation by many talented logisticians. Again the overall success of the mission speaks volumes about their determination and skill. At the same time, it reflects poorly on the state of logistics transformation. Sadly we must look back to the March 2004 congressional hearing which was concerned that after 12 years of Army logistical transformation, the overarching problems that started the movement for logistical transformation (Logistics Force Reception, Limited Logistics Communications, Shortage of Ground Transportation Assets and Theater Distribution Difficulties) still persisted. This did not speak well for what the Army had done in the past 12 years.

The Response

In March 2004, LTG Claude Christensen, then Army G4, testified on the logistics challenges and changes that must come about in light of our experiences in OEF and OIF:

“To sustain combat power, we must have the ability to “see” requirements on demand through a **logistics information network**. We must develop a **responsive distribution system** enabled by in-transit and total asset visibility and managed by a single owner who has positive end-to-end control in the theater. The Army needs a **robust, modular force-reception capability** – a dedicated and trained organization able to quickly open a theater and support flexible, continuous sustainment throughout the joint operations area. Lastly, we need an **integrated supply chain** with a single proponent who can leverage all resources in a joint, interagency and multinational theater...If we do not connect Army logisticians, improve the capability of the distribution system, modernize force reception, and provide integrated supply management, we will study these same lessons after the next major conflict.”⁴¹

The four highlighted areas continue to be the four focus areas for the current Army logistics transformation effort. These are also the focus areas found in the new sustain concept found in TRADOC Pamphlet 525-3-1 *The United States Army's Operating Concept for Operational Maneuver 2015-2024 version 1.0*. This concept stipulates that the theater army will normally be the C2 echelon responsible for linking the strategic logistical base with the in-theater sustainment systems. The in-theater organization assigned this task will be the Theater Support Command (TSC), which will function, when appropriate, as a joint functional command. This TSC gets the force a step closer to addressing problems with force-reception capability and provides the conduit for a more responsive distribution system.

The second main point in the new sustain concept calls for continued improvement in distribution-based sustainment operations. In order to make this system effective, sustainment commands must share the same quality Situation Understanding (SU) as that of the operational HQ, thereby assuring a logistical Common Operational Picture (COP) which is fully synchronized and supportive of the commander's priorities for optimizing the efficiency of sustaining operations. This continuously maintained level of CSS SU through automated, joint – interoperable CSS battle command systems offers a solution to the problems with the logistical information network observed during OEF and OIF. Only with access to such robust communications capabilities can DBL work effectively.⁴²

Connecting Army Logisticians

During OEF/OIF, even the best trained units could not electronically pass requisitions successfully due to extended distances and inadequate communications capability. Further, there was little capability to gain materiel asset visibility. To remedy these problems four sub-

tasks were identified: #1 Connect Critical Logistics Nodes, #2 Implement Movement Tracking System (MTS), #3 Field the Battle Command Sustainment Support System (BCS3), #4 Upgrade the Standard Army Retail Supply System (SARRS) with Native Radio Frequency Identification (RFID) capabilities. If these systems are fielded or upgraded they will provide the capability to: calculate requirements accurately, inform suppliers of soldiers' requirements, enable units to know that suppliers have received the requisitions, track the progress in fulfillment of the requisition, monitor supplies in the pipeline, and communicate with suppliers/customers to prioritize shipments or take other actions.⁴³

The first sub-task, Connecting Critical Logistics Nodes, assures the capability to access satellite communications to pass and receive data. The Combat Service Support Very Small Aperture Terminal (CSS VSAT) satellite communications system works in conjunction with the wireless Combat Service Support Automated Information Interface (CAISI) to provide fast, uncomplicated connectivity to the internet at virtually any time and place⁴⁴ This then enables users to pass requisitions, get updated information on the status of requisitions, and gain visibility on locations of supplies. Deployed units now have this capability.

The second sub-task of implementing MTS provides crucial visibility on materiel and distribution in theater; this vital link ensures the Army consistently delivers in-transit visibility, controls logistics assets, and performs vital distribution management functions worldwide.⁴⁵ The distribution goal is to provide "MTS in every five tactical distribution vehicles, one in every two military police vehicles, one in every two movement control team vehicles, one in every combat service support company level command and control vehicle, and one in every ground ambulance. MTS thus ensures every distribution convoy, all critical mission platforms, and any platform that controls vehicle movement on the battlefield is equipped to connect to command and control elements from anywhere on the battlefield."⁴⁶ In addition MTS vastly improves logistics units' communications capabilities. Although this will not completely resolve the situation of the scarcity of radios or any other approved communications in CSS units from the Brigade Support Battalion (BSB) to echelons above Corps (EAC), it will be a dramatic and welcome improvement, particularly for support assets above the Brigade Combat Team (BCT).

Third, the Battle Command Sustainment Support System (BCS3) enables the user to view the battlefield with logistics information superimposed on it. This logistics information-bundling capability consolidates information from over 900 disparate Army logistics and ITV systems and other fragmented data sources. BCS3 is the "Army's portion of the Joint Logistics Common Operational Picture (LCOP) and provides the initial capability of the Global Combat Support System (GCSS), the joint program for logistics automation and decision support".⁴⁷ It provides

an essential decision support capability to the logistician and supports the ability to achieve distribution-based logistics.⁴⁸ Logistical units in theater now have this capability, but it has not yet performed perfectly. But, it has been successfully used and continues to improve with each rotation.

Fourth, upgrading SARSS with radio frequency identification (RFID) enables logisticians to read and write RFID tags for receipt and release of items. RFID helps provide an answer to the ageless Army question of “Where’s my stuff?” potentially it offers visibility to logisticians at all levels to locate items during transit to their intended destination. This capability existed before current operations, but its distribution was limited prior to OIF. It will greatly assist in achieving better clarity on materiel location and help minimize re-ordering.

Modernize Theater Distribution

The Army’s goal to Modernize Theater Distribution seeks to provide three logistics capabilities: “Provide total situational awareness, provide modernized delivery platforms, and provide an integrated distribution process”. The ultimate objective is to get swift, responsive distribution-based materiel support to the right location.⁴⁹ MTS, RFID, and BCS3 all contribute to enhanced materiel and overall situational awareness. After all of these systems have become fully operational, the only part of the DBL system that needs to be improved is the Army’s wheeled vehicle fleet. Currently the Army’s wheeled vehicle recapitalization program aims to provide the force with vehicles upgraded with the latest technology.

Improve Force Reception

To improve force reception, a Theater Support Command (TSC) consisting of sustainment brigades with theater opening capability is the proposed fix. Ultimately, the TSC is envisioned to control all ground personnel reception and logistics assets flowing into theater. It will provide total visibility of logistics from all sources to the units.⁵⁰ Sustainment brigades are being designed consistent with the modularity that is being developed at the BCT level. The brigades will “move rapidly into an area of responsibility and immediately receive joint and coalition forces deploying into that area. It can provide life support, port clearance, force protection, communications, and initial distribution for forces arriving into theater.”⁵¹ This is an important restructuring of the present array of logistics units; it begins to establish in-theater logistics unity of effort through the TSC. The first TSC will deploy into the CENTCOM AOR in the spring of 2007, another step in transforming Army logistics.

Integrating the Supply Chain

Fourth, the logistics community seeks to effectively support Soldiers by integrating the supply chain. This improvement depends on establishing four capabilities: providing *total asset visibility* from the initial order to the asset provider to the requestor; *integrating* processes and information systems architecture by using the best available software to facilitate better logistics delivery, accuracy, and visibility; *utilizing best business practices* to enhance and measure improvements in supply chain management and to ensure the best support to enhance performance of weapons systems and equipment; and *creating seamless linkage* to integrate vendors, logistics agencies, and requesting elements to more proactively support the Soldiers by enabling vendors and government re-supply entities to anticipate shortages via access to Army asset visibility.⁵² All of these programs are either working or being developed to better support the force.

This analysis has revealed that great strides have been made in the last three years towards reaching some of the goals of Army logistics transformation. Probably more progress has been made in the area of connecting Army logisticians with new digital systems than at any time since logistics transformation began. If the promise of these systems is realized, then managing the sustainment pipeline - the primary goal of distribution-based logistics - will become a reality. The remaining issue is availability of sufficient ground transportation to move the supplies, basically having enough trucks, a problem confounding the Army since WWII.

In the area of Force Reception, the new TSC, scheduled to stand up in the spring of 2007 if designed correctly, coupled with the discussed improvements in connectivity, will begin to fix another problem that has been around since Operation Desert Storm. Thus another goal towards Army logistics transformation first laid out in 1999 will be nearly achieved.

Conclusion

Great strides have been made to achieve the transformational goals of Connecting the Army Logisticians, Modernizing Theater Distribution, Improving Force Reception and Integrating the Supply Chain. Yet there is more to be done, and we should never give up effectiveness for efficiency.

An effort has been underway since the end of ODS to make the Army's logistics system more efficient. Wal-Mart has frequently provided the model of efficiency in distribution-based logistics. But no military logistician believes that the Army's logistics system and process should be exactly like Wal-Mart's. The context and conditions in which military logistics is conducted are radically different and much more complex. However, the desire to achieve "Wal-Mart like"

efficiencies runs quietly under the surface. Maximizing efficiency, or even optimizing it, may not provide the necessary effectiveness. The traditional method of logistics, with its large footprint and huge stocks, was an effective method. But it clearly lacked efficiencies. Distribution-based logistics offers efficiencies, but it cannot seek these at the expense of the ultimate bottom line, which is effective support.

The laws of physics still apply to logistics transformation. Focused Logistics, Sense and Respond Logistics, Distribution-based logistics or any other new concept cannot overcome certain truths and realities that characterize military operations. Circumstances such as an extended line of communications that creates a minimum time-distance equation for transit, adverse weather, and bad or untrafficable terrain will always challenge logisticians. Requirements for the force such as food, water, fuel, and ammunition will never be driven by the capability to provide support, but simply by need. Demand-supported items associated with maintenance repair parts will always require a system that can be reactive, yet timely. Disorder, uncertainty, fluidity, and friction will continue to characterize current and future battlefields. Violence and danger, moral and physical forces, and the human dimension will remain part of the enduring nature of war. Along these lines, the common thread in post-OIF reports is not to abandon DBL and the other Army logistics transformation concepts but to determine how to make them work, particularly in expeditionary operations.

Endnotes

¹ Congress, House of Representatives, House Armed Services Committee, Subcommittee on Readiness, *Iraqi Freedom Lessons*, 108th Congress, 30 March 2004, 2.

² U.S. General Accounting Office, *Defense Logistics: Report to the Subcommittee on Readiness, Committee on Armed Services, House of Representatives GAO-05-775* (Washington, D.C.: US. General Accounting Office, August 2005), 1.

³ Dennis J. Reimer, "A Note from the Chief of Staff of the Army on the Revolution in Military Logistics," *Army Logician*, January-February 1999 [journal on-line]; available from <http://www.almc.army.mil/alog/backissues.htm>; Internet, accessed December 9 2006.

⁴ Eric Peltz, John M Halliday, Marc L. Robbins, Kenneth J Girardini, *Sustainment of Army Forces in Operation Iraqi Freedom (Battlefield Logistics and Effects on Operations)* (Rand Arroyo Center, RAND Corporation, 2005), xi.

⁵ Headquarters, Department of the Army, Field Manual #1, *The Army* (Fort Belvoir: U.S. GPO, 2001), 35.

⁶ Headquarters, U.S. Army Training and Doctrine Command, *Future Force White Paper* (Fort Belvoir; U.S. GPO, 2003),4.

⁷ Gordon S. Holder, *Focused Logistics Campaign Plan*, Washington, DC: U.S. Joint Chiefs of Staff, June 10 2003, p.6 available from <http://www.dtic.mil/jcs/j4/projects/foclog/focusedlogistics.pdf>, Internet, accessed November 22 2006.

⁸ Ibid.,14

⁹ *Delivering Materiel Readiness to the Army*, Army Logistics White Paper, Washington, DC: U.S. Department of the Army, December 2003, available from <http://www.army.mil/features/LogWhitePaper2004/LogWhitePaper.pdf>, Internet, accessed November 15 2006.

¹⁰ U.S. General Accounting Office, *Defense Logistics: Report to the Subcommittee on Readiness, Committee on Armed Services, House of Representatives GAO-05-775* (Washington, D.C.: US. General Accounting Office, August 2005), p 6-8.

¹¹ Michael Gordon and Bernard Trainor, *The General's War* (Boston: Little, Brown and Company, 1995), 57.

¹² Ibid.,475

¹³ Ibid.,476

¹⁴ Robert Scales, *Certain Victory: The U.S. Army in the Gulf War* (Fort Leavenworth: U.S. Army Command and General Staff College Press, 1994), 124.

¹⁵ Ibid.,58.

¹⁶ Ibid.,75.

¹⁷ William G. Pagonis, *Moving Mountains: Lessons in Leadership and Logistics from the Gulf War* (Boston: Harvard Business School Press, 1992),210.

¹⁸ Martin Van Creveld, *Technology and War* (New York: Free Press, 1989), 316-317.

¹⁹ GAO 05-775, 6-8.

²⁰ Gordon R. Sullivan and Michael V. Harper, *Hope is Not a Method: What Business Leaders Can Learn from America's Army*, New York: Random House, 1996,p 19.

²¹ Dennis J. Reimer, *Army Vision 2010*, Washington, DC: U.S. Department of the Army, November 1996; available from <http://www.army.mil/2010/introduction.htm>; Internet accessed on October 9, 2006.

²² Johnnie E. Wilson, John G. Coburn and Daniel G. Brown," Our Revolution in Military Logistics-Supporting the 21st Century Solider," *Army Logistician*, January-February 1999 [journal on-line]; available from <http://www.almc.army.mil/alog/backissues.htm>; Internet, accessed December 9 2006.

²³ Mark J. O’Konski, “Revolution in Military Logistics-An Overview” *Army Logistician*, January-February 1999 [journal on-line]; available from <http://www.almc.army.mil/alog/backissues.htm>; Internet, accessed December 9 2006.

²⁴ Eric K. Shinseki and Louis Caldera, “Army Vision,” *Military Review*, September-October 2000 [journal on-line]; available from <http://www-cgsc.army.mil/milrev/english/SepOct00/caldera.asp>; Internet ,accessed October 9,2006.

²⁵ U.S. General Accounting Office, GAO 04-188: *Military Transformation, The Army and OSD Met Legislative Requirements for First Stryker Brigade Design Evaluation, but Issues Remain for Future Brigades*, Washington, DC, December 10, 2003.pp.25-27.

²⁶ Peter J. Schoomaker and R.L. Brownlee, “*Army Transformation Roadmap 2003*”, Washington, DC: U.S. Department of the Army, November 1, 2003, available from <http://www.army.mil/2003TransformationRoadmap>, Internet, accessed October 9,2006.

²⁷ Ibid.,3-8.

²⁸ U.S. Department of Defense, *Sense and Respond Logistics: Co-evolution of an Adaptive Capability, Concept of Operations*, Version 3.0, Washington, DC: Office of Force Transformation, September 12 2003, para1-2; available from http://www.oft.osd.mil/library/library_files/documents_229_SRL%20CONOPS%20v3.0.doc; accessed December 2, 2006.

²⁹ *Delivering Materiel Readiness to the Army*, Army Logistics White Paper, Washington, DC: U.S. Department of the Army, December 2003, available from <http://www.army.mil/features/LogWhitePaper2004/LogWhitePaper.pdf>, Internet, accessed November 15 2006.

³⁰ Conrad C. Crane, Final Report: *The U.S. Army’s Initial Impressions of Operations Enduring Freedom and Noble Eagle*, Carlisle Barracks, PA: U.S. Army War College, August 2003. 2.

³¹ Ibid., p. 3.

³² Ibid., p. 7.

³³ Wilson R. Rutherford III, William L Brame, “Brute Force Logistics” *Military Review*, March 1993 [journal on-line]; available from <http://www-cgsc.army.mil/milrev/english/Mar1993>, ; Internet ,accessed February 1, 2007.

³⁴ Susan Declercq Brown and Phyllis Rhodes,” DLA: Logistics Backbone of Iraqi Freedom,” *Army Logistician*, July-August 2003 [journal on-line], available from <http://www.almc.army.mil/alog/backissues.htm>, Internet, accessed November 24, 2006. See also Walter Kross, Iraqi Freedom: Triumph of Precision-Guided Logistics;” *Army Logistician*, September-October 2003 [journal on-line], available from <http://www.almc.army.mil/alog/backissues.htm>, Internet accessed November 24, 2006. See also J.R. Wilson,” Logistics Fixes That Took Root,” *Armed Forces Journal*, Vol. 141, No. 3, October 2003, pp.44-50

³⁵ Walter J. Boyne, *Operation Iraqi Freedom: What Went Right, What Went Wrong, and Why*, New York: Forge Books, 2003, p.124.

³⁶ U.S. Army Operation Iraqi Freedom Study Group, "U.S. Army Operation Iraqi Freedom Observations Quick Look," briefing slide 5 of 88, Leavenworth, KS: Center for Army Lessons Learned, August 2003; available from <https://call2.army.mil/oif/brief.asp>, Internet, accessed November 24, 2006.

³⁷ Anthony H. Cordesman, *The Iraq War: Strategy, Tactics, and Military Lessons*, Westport, CT: Praeger Publishers, 2003, p. 206.

³⁸ Eric Peltz, John M Halliday, Marc L. Robbins, Kenneth J Girardini, *Sustainment of Army Forces in Operation Iraqi Freedom (Major Findings and Recommendations)* (Rand Arroyo Center, RAND Corporation, 2005), p.114.

³⁹ Declercq and Rhodes, pp. 44-50.

⁴⁰ U.S. General Accounting Office, GAO 04-305R: *Defense Logistics: Preliminary Observations on the Effectiveness of Logistics Activities During Operation Iraqi Freedom*, Washington, DC: U.S. General Accounting Office, December 18, 2003, p.3, available from <http://www.gao.gov/new.items/d04305r.pdf>, Internet, accessed November 25, 2006.

⁴¹ Congress, House, Testimony of LTG Claude V. Christianson, Deputy Chief of Staff, G-4, United States Army, before the HASC, Subcommittee on readiness, Logistics Readiness of the United States, 30 March 2004, available from <http://www.house.gov/hasc/openingstatementsandpressreleases/108thcongress/04-03-30christianson.html>; Internet, accessed November 25, 2006.

⁴² TRADOC Pamphlet 525-3-1, *The United States Army's Operating Concept for Operational Maneuver 2015-2024, Version 1.0*, October 2, 2006, pp 50-51.

⁴³ Army Logistics White Paper, *Army Logistics: Delivering Materiel Readiness to the Army*, revised April 2005, p.2.

⁴⁴ Ibid., p. 3.

⁴⁵ Ibid., p. 4.

⁴⁶ Ibid., p. 6.

⁴⁷ Ibid., p. 4.

⁴⁸ Ibid.

⁴⁹ Ibid., p. 6.

⁵⁰ Ibid., pp. 10-11.

⁵¹ Ibid.

⁵² Ibid.,p.11.

