# 21ST CENTURY COMBAT AND THE OPERATIONAL LOGISTICS LINK


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**This monograph examines the ability of the COSCOM to execute operational logistics tasks in a single corps contingency as outlined in FM 100-7 Decisive Force: The Army in Theater of Operations. The monograph concludes that the COSCOM cannot execute the operational logistics tasks required to support an operational commander. The monograph also explores the value-added prospects of new information-based technologies, which are central underpinnings to the conceptual framework of future Army logistics. Then using two but very different military operations, Operation Desert Storm and Operation Restore Hope, the monograph provides insight into the fundamental organizational problems within the COSCOM. This is followed up with an examination of the organization's future requirements and why it must change to reflect the nature and character of future conflict in the 21st century. The author contends future operations will not support the formation of ad hoc configured logistic units, and that the only way to surmount the operational logistics challenges of the future is to create a balanced force with a robust COSCOM capable of executing both tactical and operational logistics operations. Old Cold War paradigms used to shape the development of past logistics organizations will not support 21st century combat operations.**

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# INTRODUCTION

The world has changed considerably since the end of the Cold War, and so too has the United States Army. Today's U.S. Army is smaller than at anytime since before World War II. The Total Army end strength (active and reserve) between the years 1989-1997 was reduced by roughly 630,000; divisions reduced (active and reserve) from 28 to 18; and installations cut by over 700. However, the business of military operations has been on the upside. The Army's real- world deployment schedule has risen roughly three-hundred percent since the end of the Cold War.[1] The vast majority of these have been joint military operations where Army forces have played a central role providing the preponderance of personnel.[2] Most of these operations have been joint operations with a single U.S. Army Corps performing as the Army Forces (ARFOR) and or Joint Task Force headquarters, or in one particular case both. The concept of joint operations with a single U.S. Army corps serving as the land-power component is destined to be the 21st century business model for future military operations. Army doctrine professes that in single corps contingency operations, the corps' logistics command serves as the theater level manager for support.

Therefore, what warrants investigation is the ability of the Corps Support Command (COSCOM) to serve as the theater level logistics manager in future operations. First, one of the major problems of this new business model centers on issues regarding the planning, preparation, and execution of operational logistics support. Secondly, and on the heels of a downsizing force, and increased operations tempo, are the value-added prospects of a planned infusion of new information based technologies in to

the logistics force to offset reductions of force composition. The Army's logistics planners are embroiled in a force structure redesign effort, attempting to harness information-based technologies to radically alter and improve logistical force capabilities. The move is to shift from an industrial age force construct to an information-based force construct.[3] Operation Desert Storm and Desert Strike are two recent examples that provided glimpses of the shift towards leveraging information-based technologies in major weapons systems. The same concept of applying information-based systems is being applied to the effort of force modernizing logistical support systems.

Alvin and Heidi Toffler refer to this as a move from the Second Wave (industrial revolution) to the Third Wave (information revolution). Military forces in the Third Wave, as envisioned by the Toffler's are smaller, less hierarchical, decentralized, and composed of information-based [logistical systems].[4] Even though forces used during ODS and Desert Strike were products of the Second Wave, aspects of Third Wave capabilities were inherent in some of the combat systems used. So, now at the dawn of the next century, the most recent Quadrennial Defense Review (QDR) has set the stage for a bold ride on this so-called "Third Wave." However, "the [QDR's] greatest weakness is apparent when it attempts to match the extensive obligations anticipated in the post-Cold War world with the diminished resources it recommends be allocated."[5] Therefore, how does the Army plan to ride this wave?

Army vision 2010, is the Army's beacon on the shore, and the direction of the surf is set forth in the Chairman of the Joint Chiefs of Staff's (CJCS) Joint Vision 2010, and related operational concepts. Joint Vision 2010 (JV 2010) envisions exploiting new and emerging technologies brought about by the information revolution, thus creating what

some refer to as a Revolution in Military Affairs (RMA). This revolution is predicated upon the application of operational concepts outlined in JV 2010: dominant maneuver, precision engagement, full dimensional protection, and focused logistics. Focused Logistics is centerpiece for Army logistics planners, and provides the inherent conceptual underpinning plowing the path for future logistics operations. Focused logistics is defined as "the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while enroute, and to deliver tailored logistic packages and sustainment directly at the strategic, operational, and tactical level of operations."[6]

Within the context of JV 2010 and Army XXI, the Army's process for change is called Force XXI. Force XXI outlines both near term and 21st century force requirements.[7] "The near term result of Force XXI will be Army XXI-an improved version of the current force, with modernized systems enhanced with the latest information technologies."[8] The major milestones within the Force XXI process includes: fielding the first digitized division by year 2000 and the first digitized corps by year 2004. Coupled with these major milestones is the adoption of new operational patterns, called Force XXI patterns of operation.

A derivative of JV 2010 operational concepts, Force XXI patterns of operation will effect the conduct of theater level logistic support operations. Force XXI patterns are defined by the U.S. Army Training and Doctrine Command (TRADOC) as: Project the Force, Protect the Force, Gain Information Dominance, Shape the Battlespace, Decisive Operations, and Sustain the Force. Sustaining the Force in the context of Force XXI is defined as "increasing the pace of logistical operations to match that of maneuver,

through anticipatory logistics, enabled by digitization, common situational awareness and total asset visibility.[9] Sustaining the Force will become central to the formulation of a theater commander's concept of operations, particularly in single corps operations with a COSCOM as the theater level logistic manager. Over the years doctrine has focused on echelon-above-corps (EAC) units executing at the operational level, with operational logistic missions falling into the domain of the Theater Army Area Command. However, Operation Desert Storm underscored a void in EAC support, while Operation Restore Hope and Uphold Democracy are two examples of a COSCOM serving in the TAACOM domain. It is the author's contention that these latter two operations are a mere prelude to future theater level logistic operations.

Operational logistics links strategic logistics with tactical logistics. Essentially it is the bridge providing the conduit that closes the strategic-tactical gap and enables the logistics pipeline to flow from the CONUS industrial base to the foxhole. However COSCOM units were designed by Army planners to support corps tactical logistics operations. The tasks associated with operational logistics range from reception, staging, onward movement, and integration (RSOI) to sustaining the campaign plan. Logisticians at the strategic level focus on: determining resource constraints, acquiring resources, stockpiling materiel, identifying mobilization requirements, strategic mobility, establishment of a theater base and communications zone, and concentrating forces and CSS assets prior to the campaign. People who work strategic level logistics issues work for agencies such as the Defense Logistics Agency, Army Materiel Command, and U.S. Transportation Command. The tactical logisticians concentrate on sustaining battles and engagements focusing there efforts on, manning, arming, fueling, fixing, moving, and

sustaining soldiers and weapons systems. These tactical logistic functions are doctrinally performed by tactical army units Corps and below. Future operations however will very likely require tactical logistic units to simultaneously conduct tactical and operational logistics operations.

The significance of the operational logistics problem falls back on the capabilities of the COSCOM to function as the theater level manager for logistics. They are not organically manned, equipped, and organized to conduct the full array of tasks associated with operational logistics. Research will later show how the COSCOM has difficulty performing its tactical doctrinal missions, never mind operational level missions.

Yes, it is true Army doctrine recognizes the requirement to augment the COSCOM if it is performing as the theater level logistic manager. However, later evidence suggests augmentation in time of crisis has proven to be unresponsive and inefficient. The difficulty associated with trying to assemble an augmentation package from a wide mix of organizations comprised of specialized units and organizations, in many cases active, reserve and civilian is unresponsive and lacks continuity in any military environment. The author further contends the ad hoc configuration of logistics units on the fly sub-optimizes support capability. Therefore, how does this monograph attempt to examine the COSCOM's ability to sustain the force in a Force XXI joint contingency operation with a single corps?

The paper accomplishes the above by first examining the Army's current definition of operational-level logistics, and examines the combat service support (CSS) organizational structures at corps. Furthermore, the paper illustrates current doctrinal roles and missions for operational-level logistic organizations. Then through use of

historical evidence relative to recent campaigns, the issue of whether today's COSCOM matches current and anticipated future requirements is examined. Secondly, the monograph explores the concept of Force XXI and Sustaining the Force. Two principal characteristics of CSS, responsiveness and continuity are used as baseline criteria to evaluate the COSCOM's ability to execute operational logistics support in support of Force XXI operations. For the purposes of this monograph, responsiveness is defined as the ability to respond to changing requirements. Continuity is defined as the ability to sustain operations throughout the theater without disruption in support.

The monograph is made up of four chapters, each of which links itself to the central research question. Chapter one serves as a background chapter, and provides a doctrinal understanding of operational logistics and how it is currently defined in Army doctrinal manuals. Chapter one also includes an examination of logistics lessons learned in past contingency operations. Chapter two concentrates on briefly outlining the origins and relationship of the COSCOM to the U.S. Army corps, the COSCOM's current doctrinal and organizational makeup within the current force structure, and a summation of its responsibilities if serving as a theater level logistics manager. Chapter three then looks toward the future, addresses some of the new views on logistics, and reviews two of the key information-based logistics technologies being introduced into the force. Chapter four concludes the monograph by identifying significant changes that need to be made to current doctrine and COSCOM organizations in preparation for 21st century military operations.

## CHAPTER I : OPERATIONAL LOGISTICS

" In order to make assured conquests it is necessary always to proceed within the rules; to advance, to establish yourself solidly, to advance and establish yourself again, and always prepare to have within reach of your [forces] your resources and your requirements."

Frederick the Great
Instructions for His Generals, II (1747)

One of the first hurdles in overcoming the challenges of operational logistics is a unified doctrinal definition of operational logistics. A clear definition is important because Army doctrine is the statement of how America's Army, as part of a joint team, intends to conduct war and support and stability operations. Doctrine permeates the entire organizational structure of the Army and sets the direction for modernization and the standard for leadership development and soldier training. Moreover, doctrine facilitates dialogue and a better understanding of how we do business.[10] Chapter one briefly underscores key Army doctrinal definitions of operational logistics and reviews key lessons from past operations regarding the capabilities of the COSCOM to perform at the operational level.

FM 100-5, Operations dated 1993, is the Army's keystone document for military operations. This manual defines operational logistics as that which focuses on: force reception, infrastructure development, distribution, and the management of materiel, movements, personnel, and health services. Encompassing also those support activities required, to sustain campaigns and major operations in order to ensure tactical success.[11]

FM 100-10, Combat Service Support, the Army's principal doctrine for logistics, defines operational logistics as several functions. These functions relate to reception and onward movement, distribution of materiel, allocation, management, and redeployment

of units and soldiers, reconstitution, establishment and management of medical facilities and materiel, and planning, coordinating, managing, and supervising the positioning/security of CSS activities.[12]

FM 100-16, Army Operational Support provides a more definitive definition of operational logistics. Logistics at this level supports the force during subordinate campaigns and major operations within a theater of operations. The support extends from the theater of operations support bases to forward logistics elements. The focus at this level of support is the establishment and maintenance of lines of communication, and sustainment consistent with strategic logistics priorities. Primary emphasis is on: reception, staging, onward movement, and integration (RSOI), planning, coordinating, managing, and directing the positioning of supplies, maintenance, field services, managing theater reserves, creating transportation networks, providing movement assets, providing health service support (HSS), and other support required to enable units to successfully accomplish their mission.[13]

FM 100-7, Decisive Force: The Army in Theater Operations defines operational logistics similar to FM 100-16. FM 100-7 defines operational logistics as consisting of logistical support activities required to support the force during campaigns and major operations within a theater of operations. The primary focus is on, reception, positioning facilities, materiel management, movement control, distribution management, reconstitution/regeneration, and redeployment.[14]

In summary, the doctrinal definition of operational logistics in the Army is broad and unclear. Each doctrinal FM has a slight variation of exactly what is meant by operational logistics. The term as currently defined in Army lexicon does not serve the

purpose of facilitating dialogue amongst Army professionals. Without a clear and precise definition, the Army will never adequately address the doctrine, training, logistics, organization, materiel, and soldier (DTLOMS) issues, and continue to rely on improvisational solutions to future military operational logistic problems. For the purposes of this monograph, the doctrinal definition from FM 100-7, Decisive Force: The Army In Theater Operations will be used since the FM is prefaced to serve as the Army's manual on operational art. This next part reviews lessons learned at the operational level using mainly two recent operations: ODS and Operation Restore Hope.

## Lessons from the Past

Demise of the German forces at Stalingrad in 1943, American failure in Korea in 1950, and the capitulation of the French at Dien Bien Phu in 1954 share a like experience. Each was a failure in part because of the inability to deploy their force and sustain them in the fight. However, Normandy and the Burma campaign during WWII, and the battle for Khe Sahn were victories due in part to the effective deployment and sustainment of forces.[15] From WWII and major contingency operations ever since, each time the U.S. Army has participated in an operation, the operational logistics organization has been ad hoc.[16] One can easily argue, ad hoc formations of logistics support organizations, is not a sound business practice. "A critical assessment of U.S. Army engagements since WWII shows ad hoc theater support commands evolved out necessity, but were terribly inefficient and wasteful."[17] Due to the lack of robustness and redundancy in today's logistic force the Army can no longer afford to be inefficient and wasteful. Successful logistics must be both efficient and effective, for the mission of the entire Army logistics

system is to provide support in the right quantities at the right time and place.[18] However in light of this fact, recent operations demonstrate our continued reliance on inefficient and marginally effective ad hoc logistics organizations to get the job done.

The ad hoc approach is unsound for logistics operations because it lacks the ability to achieve the anticipation needed to support efficiently and effectively.[19] Units brought together only in crisis without any collective training preparation, can only expect to be marginally effective at best. The notion of also doing the best you can with what you got leads to further requirements becoming problematic to support because there is an overwhelming reliance on improvisational means.[20] With the exception of improvisation, the characteristics of logistics espoused in doctrine are not attainable in their purest sense. The resources needed to meet logistic requirements are not available in peacetime. Kenneth Macksey points out in his book, For Want of a Nail, that if one examines the defeats of Great Captains, the conclusions reached are that inferior peacetime logistics preparation, parsimony, and the naïve hope that things will be alright when needed is a common thread. The U.S. Army's logistic community has been the bill payer for years, evident over the past decade and a half of force reductions. Many of these reductions were prefaced with promises of adding new and advanced technologies to logistics organizations to mitigate known shortfalls in capability, while at the same time enhancing productivity. Unfortunately, many of these new and advanced technologies never came to full fruition. A program called the Logistic Unit Productivity Systems (LUPS) program sponsored by Fort Lee in the eighties failed in its charter to introduce these new technologies to the force.[21] And it was during this time the Army used a term called AOE risk to describe the risks associated with the decrease in CSS

manpower in expectations of gains and efficiency from new productivity enhancing initiatives.[22] Today, as the Army nears the next century, there is some concern among TRADOC analysts of a FXXI CSS risk.[23]

Operations Desert Storm (ODS), and Restore Hope are good examples of where improvised solutions were used to achieve the desired military end- state. The success of these operations could very well be the curse to any fundamental improvement in military logistics. However, if taken within its context, ODS was against a weak enemy in a permissive-entry theater with lots of available host nation support. The in-country theater infrastructure contained exceptional seaports of debarkation (SPOD) and airports of debarkation (APOD).[24] On the other hand, Restore Hope was a limited force humanitarian operation, which took place in permissive-entry environments with a benign threat.[25] During Restore Hope the nature of the mission afforded the COSCOM time to deploy and adapt to the joint and combine nature of the mission.[26] The future will be different, and the U.S. Army needs to be prepared for when the latter conditions are not so accommodating. This next part underscores operational logistic issues that must be overcome quickly if the corps is going to succeed on the future battlefield in the 21st century. This part uses key fundamental lessons from Operation Desert Storm (ODS) and Operation Restore Hope to help highlight the role of the COSCOM in these operations, and how they played into the operational logistic problems within the overall force.

## Operation Desert Shield/Storm

> "The work of Gulf War logisticians was miraculous. But we must not continue to flounder in crisis, as we have historically done."[27]

The primary operational level logistic missions during ODS involved reception, onward movement, and sustainment of U.S. Forces in Southwest Asia (SWA). The theater for ODS included Saudi Arabia, a desert country one-third the size of the continental United States. Saudi Arabia provided modern seaports of debarkation (SPODS) and airports of debarkation (APODS) with modern roadways in and around the ports.[28] Without question, luck was assuredly on the side of the military victor in this case. Future contingency operations most likely will not be capable of providing the same sort of SPOD, APOD, and roadway support as was found in Saudi. Many of these operational facilities, critical to the deployment of forces in a theater will have to be put in place concurrent with combat forces engaged in combat. Commanders are going to have to make tough choices on who deploys first and how, and on the security of theater logistical support areas.[29] These tough choices make the phased deployment timeline operationally significant to the success of the campaign. During ODS, and in stark contrast to available logistics doctrine, a theater support command (TSC) was formed on the fly to meet the operational logistic requirements in theater.

On 10 August 1990, an ad hoc theater support command, (later designated 22nd SUPCOM) was established to take on the mission of coordinating the arrival of the first units and supporting forces throughout the theater.[30] In the earliest stages of U.S. force deployment, four people made up the entire theater logistical system, MG Pagonis, (later in the war promoted to LTG), and three other officers. Pagonis "from [his] worm's eye

perspective, along with three other people constituted the entire logistical operation in the theater."[31] Thank goodness for the inaction on the part of the enemy. Pagonis' team was allowed several months to get organized before the ground war kicked off in February of the next year.

Once again, out of necessity, improvisation became the overarching principle guiding the ODS theater logistical support effort. However, the decision to deploy an ad hoc theater level logistic element underscored a major void in doctrine for contingency operations. Doctrine professes it is only when more than one corps is stationed in theater that a Theater Army Area Command (TAACOM) is deployed.[32] Although 22nd SUPCOM was not a TAACOM, it performed identical operational logistic missions. If doctrine were followed, it would not have been until after VII corps was deployed that a TAACOM should have been deployed. The problem here is that the TAACOM is a Cold War relic, and not designed to support force projection operations.[33] This is where credence can be lent to the current plans for a force projection Theater Support Command. During ODS, the first corps in theater, were units from the XVIII Airborne Corps, which flowed into theater without the support of its supporting corps support command. The corps' COSCOM did not flow into theater for almost a month afterwards. A senior officer stated, "the 82nd was going die in place either from the Iraqis coming across the border or for the lack of food and water."[34] Pagonis' team had to pick up the sustainment effort for the XVIII Airborne Corps until the corps' COSCOM was established in theater.[35] Could the XVIII Airborne Corps' support command have provided theater level logistic support to its supported corps and other U.S. forces?

The answer to the above is a resounding no. COSCOM's according to doctrine

should be the first logistics organization to flow into an undeveloped theater of operations.[36] If in fact doctrine matched reality, the mission of the XVIII Corps' COSCOM initially would have been support of the corps force, and theater level support to other Army units. The COSCOM could have also been directed to provide select support to the other Services in theater. Reality in this case would not have matched doctrine. Requirements of the corps force would have overwhelmed the COSCOM's efforts to sustain both its supported corps force and other forces in theater. For example, when the XVIII Airborne Corps' 1st COSCOM finally arrived, it was dependent upon the 22nd SUPCOM for support as it established its own operations. Once established, the COSCOM's efforts were focused mainly on tactical logistics functions in support of the corps.[37] The operational logistics tasks required to deploy and sustain forces in theater would have quickly eroded had it not been for the tremendous efforts of Pagonis' initial team followed by the 22nd SUPCOM.

If 1st COSCOM also was tasked to execute the operational tasks performed by the 22nd SUPCOM, requirements would have exceeded COSCOM's capability.[38] This would have resulted in a sharp degradation of responsiveness and a break in continuity of support for forces throughout the theater. What to deploy first into theater during contingency operations is always going to be a dilemma, but the Army needs to get smarter on how it conducts force projection operations. The tooth-to-tail dilemma, an age-old military problem is irrelevant in this new environment. The gamble to deploy the "teeth", well ahead of the "tail" in the Gulf paid off-this time.[39] Future foes are more likely to quickly adapt and take debilitating and decisive action. The easy walk into the Gulf will not be the condition set by the enemy in the Army's next regional conflict. In

the case of ODS, the enemy did nothing to take advantage of the lack of sustainment capability in theater. The enemy basically supported his own defeat, by allowing a slow gradual build up of combat power, the formation of an ad hoc logistical support command, and a base of operations. If the enemy had opted simply to conduct localized harassment or terrorist type operations early on, he could have easily disrupted logistic operations and impacted on the frail sustainment capability of the XVIII Airborne Corps' early arriving units. Stated in an Institute for National Strategic Studies report, "future enemies need only to exploit the lessons of the Gulf War to disrupt America's deployment and sustainment.[40] Without question, the military victory in the Gulf would have been slower and more painful had the enemy taken a vote. As evidence will later show, force structure cuts made over the past decade created sustainment problems above and beyond those associated with deployability. Making logistics even more challenging was the fact our strategic, operational, and tactical logistic organizations were still geared for the Cold War.

The CSS capability in ODS hampered by slowness in deploying was encumbered equally by a lack of organic resources. What made the situation even more difficult were the reserve components units who were incapable of performing their wartime missions because of manning, equipping, and training shortfalls.[41] This factor by itself places the active component in a precarious position during any major crisis response. Not suggested to take anything away from reserve force performances in the Gulf, the problem is reserves now maintain the preponderance of functionally oriented CS and CSS units, with roughly seventy percent of support units in the reserve force structure.[42] Given this heavy shift in CSS resources to the reserve forces presumes a call up will

occur. The problem is call-ups are not always guaranteed. Vietnam is a great example where reserves were not called upon to support the nation's war effort. Use of reserve forces is purely subject to the vagaries of the political climate. And due to the lack of absolute certainty that reserves will be mobilized when needed, suggests a need for an active component logistics structure carefully crafted in peacetime to meet war time requirements.[43] As evidence will later show, CSS units across the board in the Gulf were victims of 1980's force modernization abuse. As the old saying goes, "your only as good as the tools you have to work with" stands out sharply for CSS organizations during the Gulf War. Personnel, equipment, and organizational design shortfalls had significant impacts on logistic operations. For example, one of the major problems was the initial authorized-levels-of-organization (ALO) for COSCOM's, specifically the 2nd COSCOM in support of VII Corps. The COSCOM headquarters (HQ) was ALO 4, the 800th Materiel Management Center (MMC) was ALO 6, and the 229th Movement Control Center was ALO 5. As a result, after action reports from the 2nd COSCOM commander underscored the impact of minimal staffing of key positions and subsequent difficulties in planning and deployment.[44] These personnel shortfalls in key positions were compounded by equipment shortages. The areas of particular concern were communications equipment coupled with limited mobility and logistic support system type resources.

Central to the success of logistics is maintaining continuous communications and possessing the ability to move on the battlefield. The 2nd COSCOM commander indicated in his after action memorandum that in terms of communications equipment, tactical satellite (TACSAT) communications had minimal value and failed to satisfy

requirements. Instead other systems were used to send key logistics information, but not used to command and control operations because of the non-secure nature of the system. Weather also had its effect on communications. The 2nd COSCOM commander pointed out that only when the desert winds were not blowing fiercely were there clear uninterrupted data linkages.[45] The issues surrounding mobility and sustainability became problems due to shortages of the right equipment. For example, there were not enough rough terrain container handlers (RTCH), materiel handling equipment (MHE), and heavy equipment transporters.[46] Luckily, many of the transportation issues were solved through host nation support (HNS) and contracting.[47] Saudi, a rich country had the transportation resources available for use inside the country. Others potential hot spots for U.S. and allied crisis intervention will most likely not be so supportive. In the Gulf it is undeniable how "Host Nation Support was critical to the success."[48] Even still it is not a panacea to solve all military logistic shortfalls. For example, the delay of VII Corps out of port for nearly a month was said to be the result of an issue over contracting.[49] This plainly provides some insight into the potential problems that may arise with a military force dependent on other nations to provide logistical support. While communications and mobility equipment issues degraded responsiveness and continuity, the ways in which the ground war unfolded also led to further sustainment challenges.

> "Logistics units were hard-pressed to keep up with the rapid pace of maneuver units. Both logistics structure and doctrine were found wanting in the high tempo offensive operation... Had the operation lasted longer, maneuver forces would have outran their fuel and other support."[50]

The fast pace offensive operations over extended distances, characteristic of future operations, stressed the logistic system to the point of abysmal outcomes. With the 2nd COSCOM's command and control systems impacted due to the extended lines of communication, sustaining rapidly advancing combat movements became nearly impossible. For example, ammunition resupply points, and trailer transfer points were inundated; and unserviceable materiel was simply abandoned instead of evacuated.[51] The theater wide logistics automation network; the heart of any modern military logistics system was ineffective and inefficient. Reports indicated that, "during ODS there was no log automation, and everyone resorted to the old, comfortable, easily understood and not easily screwed up manual system."[52] The "sneaker net" was alive and well and data ended up being passed along by other very low-tech methods.

Clearly, the tactical sustainment problems experienced by 2nd COSCOM suggests a fundamental problem with manning and equipping of the COSCOM. Any infusion of new technologies into the logistics force, minus a reevaluation and assessment of manning and equipping levels within the COSCOM will fail to result in any marginal improvement in execution. Manning and equipping factors within COSCOM highlighted above do not even tie into the equation the requirement to perform operational logistics functions. This next part examines the conduct of operational logistics support in a Support and Stability Operation (SASO) on the continent of Africa. Here again, a force projection operation, only this time with an unprecedented mission for an U.S. Army COSCOM.

## Operation Restore Hope

Nearly two years following ODS the U.S. Army conducted humanitarian assistance (HA) in Somalia on the continent of Africa. In relation to ODS, the deployment was small, but still over an extended distance. The AOR covered nearly 15,000 square miles in southwestern Somalia. Logistics operations were set up to support HA and security operations. Called Operation Restore Hope, it marked the first time in modern U.S. Army history that a COSCOM was given the mission to provide theater level logistics support to a joint and later combined command.[53]

This new mission was not given to the COSCOM (13th) until eight days after the decision to create a joint task force support command (JTFSC) and eleven days after the designation of the ARFOR.[54] Here is a prime example of planners putting the COSCOM in a position of reacting to requirements versus anticipating requirements. And just like during ODS, a non-doctrinal ad hoc support approach was used to meet operational requirements, thus, providing further evidence of another gap in doctrine. The whole concept of the JTFSC did not go over well initially, and because the JTFSC was non-doctrinal, a lot of problems with C2 relationships, unity of command, and priorities for planning and executing the deployment resulted. Equally as important, since the term "Joint" implied the JTFSC had joint responsibilities, efforts to become a joint command failed. The JTFSC for the entire operation remained a pure Army manned command.[55] Making matters worse, the makeup of the JTFSC's major subordinate organizations was a conglomeration of organizations, none habitually related to 13th COSCOM.

Major units making up the 13th COSCOM were: 593rd Area Support Group

(ASG), the 62nd Medical Group from Fort Lewis, Washington, and the 7 Transportation Group from Fort Eustis, Virginia. Upon arrival in theater, these units were further task organized. The 593rd ASG, Fort Lewis, Washington was task organized with two battalions, one Quartermaster battalion from Fort Lee, Virginia and one Supply and Services Battalion from Fort Drum, New York.[56] How this ad hoc configuration eventually worked is remarkable, if one considers the units formed on the fly. The deployment problems affecting operations during ODS were again evident while supporting the deployment of forces in Somalia.

Operations took fifty days to stand up the JTFSC in a very benign environment that only provided limited combat service support.[57] JTFSC units, specifically 7th Transportation Group arrived after fifty percent of the ARFOR units already deployed and nineteen days after pre-positioned equipment ships were at the SPOD.[58] The 7th Trans Group tasked to augment the JTFSC was unable to perform its core mission of RSOI. This is evidence of yet another example of the inefficiencies associated with augmentation of logistic units during contingency missions. Lack of responsiveness and continuity of support to deployed combat forces is thus a byproduct. The JTF's plan to use pre-positioned equipment, a key component of the military's force projection strategy, also showed some operational vulnerabilities in Somalia.

The cornerstone of our Focused Logistics concept rests upon the successful utilization of pre-positioned equipment.[59] However, just like regular maritime vessels, they too are subject to the vagaries of the weather. During Restore Hope three pre-positioned ships used to deploy Army materiel and supplies to theater set sail from Diego Garcia, and never unloaded their cargo in Somalia. High seas prevented in-stream

discharge at the SPOD.[60] If this had been a combat operation the ramifications of this failed deployment of cargo is evident. Logistics operations in Somalia also had its share of organization and equipping shortfalls, which failed to optimize the support effort. Support issues may not have been on the scale relative to those during ODS, but yet enough for future planners to take heed.

The JTFSC supported operations in Somalia without a large general support (GS) base in theater. In the effort to keep down the theater footprint, a common theme in focused logistics, DS units not manned, equipped, or trained to execute GS support absorbed the theater level GS mission requirements.[61] Luckily, the size and composition of the supported force, coupled with the short duration of the JTFSC operation enabled DS support elements to expand their mission profile reasonably well. This would not have worked had the mission of the JTF intensified and escalated to peace enforcement. The GS support tasks being performed by units not designed for those type missions would have quickly degraded, and they would have been consumed with their basic mission. Coupled with organizational constraints, the communications support in theater also affected support operations.

Relative proximity of units dispersed throughout the area of operations (AO) exceeded most FM and mobile subscriber equipment (MSE) communications. Satellite systems were used to close communications gaps, but there were not enough systems in the JTF to go around. Added to that limitation, satellite access and stabilization problems further limited satellite communications.[62] Important to point out was the vast improvement in automated data networking during Restore Hope when compared to ODS, but the problem still existed for units not properly equipped. The Center for Army

Lessons Learned (CALL) report for Operation Restore Hope reported that non-divisional units were the units not properly resourced.[63] This would in general apply to all forces at echelons-above-division (EAD).

In summary, the ideal logistic organization should not require a fundamental change to manage the transition from peace to war.[64] Failure to create and train an organization in peace time, will only burden the leadership with urgent reorganization and training requirements in time of war. Rather, the focus of the organization and its leadership should be on the effective and efficient employment.[65] The false business practice of taking resources from an existing organization to build an ad hoc one degrades the capabilities of both.[66] Operational necessity shaped the development of logistical support in both operations. The lack of a sound doctrine, organization, and the evolving character of military operations in the 1990's forced military planners to put the proverbial square into the proverbial round-hole. Squeezing out requirements in time of crisis cannot continue to be the case. Future operations, projected to be more complex and uncertain, will demand a different support concept. This next part looks at the corps and its relationship to the COSCOM, and will shed light on possibly why some of the fundamental problems of sustaining a corps exist today.

## CHAPTER II: THE CORPS and ITS SUPPORT COMMAND

> "Before a commander can even start thinking of maneuvering or giving battle, of marching this way and that, of penetrating, enveloping, encircling, of annihilating or wearing down, in short of putting into practice the whole rigmarole of strategy, he has-or-ought to make sure of his ability to supply his soldiers."[67]

The Corps is the largest tactical unit in the U.S. Army. A March 1974 (test)

version of FM 100-15, Larger Unit Operations established the corps as the Army's principal force in theater.[68] Tailored to meet requirements in a given theater, today's corps is composed of organic combat, combat support (CS), and combat service support (CSS) organizations. CSS organizations within the corps are comprised of the Personnel Group, Finance Group, and the COSCOM.

However, it must be understood that the COSCOM and its relationship with the U.S. Army Corps is relatively new, and this may explain many of the difficulties associated with sustainment of the corps. As an organization, the COSCOM did not really exist until 1973, until the Army decided to eliminate the field army support command (FASCO).[69] This decision to eliminate the FASCO had two major effects on the Corps: responsibility for sustainment shifted to the Corps, and larger battle space was created between Corps and the communication zone (COMMZ).[70] The COSCOM's charter is to focus on providing the divisions and non-divisional units of the corps with the following types of support: supply, field services, transportation, maintenance, and combat health support.

FM 63-3, Corps Support Command states that in a single corps contingency environment the COSCOM assumes the role of theater level logistics manager, and upon direction supports other Services.[71] The FM places a rather over ambitious mission on the COSCOM, in light of critical sustainment issues brought to the fore during the "Corps 86" development process. In the words of Martin Van Creveld, "the first prerequisite for any regular logistic system is, of course, an exact definition of requirements.[72] During the development of Corps 86 it was never determined what capabilities and shortfalls were evident in the COSCOM organization, and "division needs from Corps were never

quantified under Division 86."[73] In 1987, the U.S. Army III Corps conducted a study to determine the COSCOM's support capability, and found that the Corps' CSS structure could not provide adequate support.[74] This explains some of the reasons for the inability of the COSCOM to adequately perform their doctrinal mission during ODS and Restore Hope. This next part reviews the organizational structure, and doctrinal roles and missions of units/section which comprise an Army of Excellence (AOE) COSCOM.

## The COSCOM Organization

The COSCOM organization is not fixed and is dependent on a number of variables. These variables include: area of operations, number of soldiers to be supported, type of organization to be supported, number and types of weapons systems to repair, and tonnage of supplies to be issued and transported.[75] The baseline COSCOM organization consists of a: Headquarter and Headquarters Company (HHC), Corps Materiel Management Center (CMMC), Corps Movement Control Center (CMMC), a variable number of Corp Support Groups, Medical Brigade, and a Transportation Group if three or more functional transportation battalions are placed in the corps force structure.

The HHC mission is to command and control all assigned and attached units; plan for and direct the provision of logistic support, and, when directed and appropriately augmented by supplemental communication, support other separate unified, specified, or joint forces. The key point here is the appropriate level of augmentation required from outside sources. As the HHC employs within relative proximity of the corps rear command post, its large complex and immobile structure allows it to move only once

every eight to seventeen days. Eight to seventeen days is inadequate for today's force, never mind tomorrow's force, especially when on considers rapid mobility and deployability as critical imperatives for today's Army operations.

The principal section within the headquarters focused on the technical supervision of external logistics support is the support operations section. This section's mission is to sustain, arm, fuel, fix, and move the corps force, all of which are tactical not operational logistic functions. To support the corps force, the support operations section executes staff supervision over the CMMC and CMCC, synchronizes resources with corps priorities, and interfaces with the CSG support operations sections.

The CMMC provides centralized materiel and maintenance management for the corps. The CMMC processes requisitions, issues materiel release orders, and performs automated stock control. Personnel who work in this center review supply demands, compute corps materiel and maintenance requirements, and evaluate the workload and capabilities of COSCOM supply and maintenance units and cross-level resources of subordinate CSGs to achieve maximum efficiency. The data received by the CMMC is used to assist COSCOM support operations in determining the effectiveness of the staff. In order to provide on-site materiel management support of a force projection operation, the CMMC displaces elements forward, leaves the remaining elements in a sanctuary, either in CONUS or forward in theater. This has come to be known as split-based operations, and another means to reduce the logistics footprint in theater. Under this concept, the home-based CMMC is augmented with TDA civilians who process the bulk of CMMC management activities. However, "assured" communications plays a key fundamental role in the ability of the CMMC to execute requirements in a split-based

configuration. Evidence has already shown some of the fundamental weaknesses in logistics communication systems, all of which can easily hinder a split-based operations concept in a Force XXI environment.

The CMCC is the movement control organization at corps level. It provides the extensive regulation and coordination with allied forces and civil commerce required to prevent congestion and conflict of movement over LOCs throughout the corps area. Their primary purpose is to provide centralized movement management and highway traffic regulation in support of a corps. Depending on METT-T, the COSCOM attaches movement control teams (MCT), movement regulating teams (MRT), and air terminal movement control teams (ATMCT). MCT's and ATMCT's are placed under the operational control of MCC Plans, Programs, and Operations Division. The MCC plans, programs, and operations division is responsible for developing and implementing the corps movement program, monitoring inbound and outbound movements from the corps rear area. MRT's are placed under the operational control of the Highway Traffic Division, responsible for regulating highways within the corps area, and coordination of movements originating within the corps and terminate outside the corps area.

Corps Support Groups (CSGs) are tailored organizations. There is no standard CSG in the Army. A CSG headquarters provides C2 of three to seven assigned and attached logistic battalions. Forward CSGs, the CSG (F) employ in support of non-division forces operating in a division area of operation (AO). The current basis of allocation is one per committed division, with the mission of providing support on an area basis to corps CS and CSS forces that support divisions, separate brigades, and Armored Cavalry Regiments. CSG's can also provide reinforcing support to the

committed division. The concept of providing support on an area basis, known as area supported, is touted as the most efficient and affordable way to provide support. The idea was introduced to the Army during the push to shave CS and CSS force structure during AOE development in the eighties.[76] Under this method, the CSG supports units located in or transiting through their area of responsibility, in theory this requires less logistical units to be assigned to maneuver oriented units. The other support options include operating forward bases inside division and brigade AO's, and coordinating support for corps forces with divisional logistic elements. In the latter situation, divisional logistic elements normally require augmentation by a CSB element.[77]

CSG (F) task organizes multifunctional direct support (DS) corps support battalions (CSB) to support non-division units operating inside a division's area. Remaining CSG (F) CSBs elements, DS and general support (GS), employ behind the division rear boundary to support units in their area of responsibility. However, they can provide GS supply, reinforcing maintenance, and field services to divisions, separate brigades, and the ACR. Also, one of the CSBs can even provide the nucleus for regeneration operations. When operations tax divisional elements supporting corps forces inside the division AO, the CSG reinforces the capability of the divisional logistic elements with elements from the CSB.[78]

Rear CSGs, are allocated on the basis one per COSCOM. Their mission focus is on supporting the corps and providing reinforcing support to the forward CSGs. The rear CSG consists of functional battalions and one or more multifunctional battalions. The CSBs provide DS level support on an area support basis to units in or passing through the rear portion of the corps rear area. Just as the CSG (F), the rear CSG can tailor a force to

serve as the nucleus of a regeneration site in the corps rear area.

The Medical Brigade provides C2 of assigned and attached medical units. As a composite the medical brigade provides health service support, which includes dental, psychiatric, laboratory, preventive medicine, and veterinary services. The task organization of the brigade's medical assets is based on patient workload demand and requirements.

The Transportation Group can be attached to the COSCOM if three or more functional transportation battalions are included in the force structure. The mission focus of the group would be on providing corps wide support of tactical operations and supply and replacement distribution. The transportation group headquarters would come from EAC force structure, and additional EAC structure would be provided to support sustainment of air, motor, rail, and water terminal operations. If the COSCOM is tasked to serve as a theater level logistics manager, what operational tasks will it have assigned to perform?

## COSCOM as Theater Logistics Manager

In a single corps contingency operation, the COSCOM assumes the role of the theater level logistics organization manager and as directed, provides support to other Services. In principle each Service takes care of its own needs, however, in practice the JTF commander tasks the Service that is the dominant user to provide or coordinate support for all Service components. Below are listed the various areas according to FM 63-3 Corps Support Command where COSCOM would provide support to other Services.

General Supply Support: Based on directives from the CINC, Service components

supply support for their forces.

- Common Items - provided by the Service that is the dominant user.
- Supply and Storage - CINC allocates available storage space and facilities between Services.
- Map Supply - based on agreements the COSCOM would support the map distribution system.

Subsistence Support: COSCOM is responsible for subsistence planning.

Water Support: Water resource support beyond a Service's capability is provided by the COSCOM or another Service, as appropriate.

Ammunition Support: COSCOM munitions support personnel must take under consideration the requirement of supporting U.S. forces, deployed within a joint operations area (JOA).

Petroleum Support: COSCOM is responsible for inland distribution of fuel to all U.S. based forces within an overseas-theater.

Maintenance Support: Each Service provides maintenance support for its own forces.

Transportation Support: JTF commander normally assigns all surface transport responsibility to the Army component commander. COSCOM transportation support personnel therefore perform intra-theater transportation planning.

Field Service Support: COSCOM is responsible for operating one or more collection points for the remains of all Services. Inter-service or cross-service agreements may require COSCOM to provide other field services.

Base Facilities Support: Base Support Battalions, not assigned to COSCOM's

coordinate joint service use of base facilities.

Health Service Support: Each Service provides hospitalization for its force and as required support to other Services. The COSCOM medical brigade can operate facilities for joint use. The COSCOM is however responsible for all evacuation by land, including inland water transportation, and short distance air-medical evacuation within areas not supported by Air Force air-landed logistic support.

In summary, CSS organizations within the Corps are comprised of the Personnel Group, Finance Group, and the COSCOM. The COSCOM as an Army entity did not exist until 1973 following a decision to cut the FASCO from the Army's force structure. The impact of that decision on the corps was twofold: Corps now had its own sustainment responsibility, and a larger battle space was created between Corps and the communications zone. The Corps 86 study conducted in the early eighties never validated the capabilities and shortfalls of the COSCOM, and a III U.S. Army Corps study conducted in 1987 underscored the inadequacy of the CSS structure to sustain the Corps.

The COSCOM organization structure is not fixed and is composed of a baseline structure which consists of a HHC, CMMC, CMCC, and a variable number of CSGs, a Medical Brigade, and a Transportation Group when assigned three or more battalions. The CSG's mainly provide support on an area support and reinforcing basis, with the normal method of distribution being on a supply point distribution basis. Supply point distribution requires units to travel to designated points on the ground, normally to their rear for specific materiel and services requirements. As units become more dispersed on an ever expanding battlefield, the way the COSCOM conducts its core business of sustainment will have to change. This next part explores the future and the potential

impact on the COSCOM serving as the theater level logistics manager.

## CHAPTER III: A LOOK TO THE FUTURE

> "Force XXI sustainment is about the need for bold change in how the CSS functions will be performed in the next century. CSS forces will be called upon to do more with less."[79]

The future Army will be smaller and required to confront new, expanded, and diverse missions in an uncertain environment, while simultaneously becoming more dependent on U.S. Army Reserve and National Guard Forces. Operations in the future will seek not only to seize the initiative and dictate the tempo, but also to maintain that tempo over time.[80] Based on an historical performance review of the COSCOM, inherent logistics capability will have to improve markedly in order sustain future requirements. The ability of the COSCOM to anticipate and execute requirements will have to be realized before Force XXI can be successful. The key operative word is "execute," and the success will rest upon the full integration of digitized information based technologies, increase in organization robustness, and improved sustainment capabilities of the U.S. Army Reserve and National Guard Forces. Knowing the requirements via enhanced information systems, but still operationally short the physical means to support them, is worse than not knowing the information at all. The bottom line is that "until alternatively powered vehicles and weapons are developed, logistics will remain the decisive problem for Force XXI operations."[81] Therefore, can a new paradigm solve the logistics problem at hand?

## Paradigm Shift

> "In comparison to the Cold War, there is a paradigm shift in the type of conflict we can expect to encounter, thus commanding a new approach for moving and sustaining forces."[82]

The U.S. Army Training and Doctrine Command (TRADOC) the lead agency for driving the change of the Army believes a new paradigm is called for in logistics. They have come to surmise a demonstrable need to break free of the past and develop a new model for the current intellectual, organizational, and technological approach to logistics. In one of TRADOC's key pamphlets for force development it states, "logistic paradigms developed to support the general conflict mold of the Cold War are now inadequate and have caused the development of a number of improvements. But the Army's historical mind-set of echelon support and structured tooth-to-tail ratio has little place on this new [battlefield]"[83]

Dominant aspects of the future battlefield are key: battle command, extended battle space, simultaneity, spectrum supremacy, and rules of war.[84] The future battlefield environment will be much larger, forces more dispersed, and linear formations and operations a thing of the past. Time phased and sequenced battles and campaigns are history, and current COSCOM logistics organization designs will simply not suffice. For example, heavy Army divisions today operate across a battle space of 100 x 120 kilometers. They are projected to operate over a battle space 120 x 220 kilometers.[85] Moreover, these future operations will predominantly be offensive in nature vice a Cold War stance as in Europe. The attack will become the operation of choice and executed simultaneously throughout the depth, breadth, and width of the battle space; first to shock and then destroy the enemy. Combat commanders will opt to conduct raids along with

deep strikes. [86] Given the shift to the offensive form of operations, the COSCOM as currently composed will be hard pressed to sustain its supported corps tactically, while at the same time trying to execute as the theater logistics manager. Area support and reinforcing support concepts will need to be rethought to support these future operations. Future tactical operations will be heavy consumers of all of the resources assigned to COSCOM's, leaving very little to none available to support operational logistics type missions. COSCOM elements will need to be more mobile, deployable, and robust in capability to sustain and command and control support operations across an expanded battle space.

COSCOM units must also be rapidly tailorable, and not dependent on augmentation from outside sources of support. ALO levels will need to be on par with supported units. ALO 1 and 2 should be the peacetime authorization levels for personnel and equipment assigned to COSCOM's, enabling them to respond to crisis in an efficient manner. Secondly, COSCOM organizations must be augmented with information based technologies, requiring them to also have the latest communications equipment available. Organizations must be designed around a modular framework, and within those modules possess the physical means to carry out assigned tasks. This does not mean smaller organizations, but organizations with more trucks, MHE, RTCH and heavy equipment transports to make them capable of executing doctrinal missions.[87] The business practice of ad hoc configuration of units to meet shortfalls in organic capability to match theater wide requirements is too slow. This practice will continue to result in inefficiency, and lack the responsiveness and continuity required for successful prosecution of Force XXI type operations.

In the Force XXI environment intra-theater lines of communication (LOC) will be longer. A heavy toll will be placed on distribution, demanding a look at the current definitions of line-haul and local haul transport. Resources within the transport community will need to be all terrain capable, equipped with sophisticated communications, and possess a robust self-protection capability. Other lexicon such as the current definitions of the communication zone (COMMZ) and combat zone (CZ) may need modification or elimination from doctrine. These terms were defined on the basis of expectations of a traditional linear lock step and time phased battlefield framework. Future operations will be non-linear, multidimensional, and simultaneous. Support must be provided where needed. Rear area combat likely to be higher, places a greater demand on COSCOM units to be self-defending.

A forced entry type situation makes the sustainment effort that much more difficult, especially when forced to conduct operations into bare-based areas of operations without HN support. These types of operations stress the strategic and tactical lift and the on the ground sustainment effort significantly.[88] Evidence is clear that the old paradigm for logistics will not match future realities. The COSCOM is going to have change in size and composition, and possess the inherent capabilities to support effectively and efficiently in this new environment. The COSCOM designed to fit our Cold War paradigm no longer fits. Inside today's COSCOM model is a heavy dependence on host nation support to fill support capability shortfalls. ODS provided sound evidence of this dependency dilemma. The lack of organic capability can be attributed to preparing for war in Europe over the past few decades and reduced defense spending. For example, during the 80's, Force Modernization arguments were made that Europe had plenty of

railroads to move [materiel/men]. Therefore, in the zero-sum game of defense spending the Army bought more major combat systems than major support systems.[89] Today this lack of major support systems in the Army's inventory will greatly challenge the strategic, operational, and tactical logistic systems. Pagonis, points out this lack of support equipment in his book Moving Mountains, and attributes them mainly to tough choices having had to be made between combat systems and support systems.[90] As a result, these years of neglect in CSS force modernization has placed a heavy burden on downsized logistic organizations to meet requirements. Even still, the push is on to continue to reduce logistics force structure and logistics footprint, relying on technology and such concepts as pre-positioned equipment on land and afloat to offset strategic lift and forward presence.[91] Needed today more than ever in preparation for tomorrow, given the projected rapid tempo, non-linear environment, increased dispersion of forces, and extended LOCs is a more robust active component logistics system. ODS proved that logistics sustainment is a "brute force" concept, and the historical evidence underscores the requirement for the logistics system to be sufficiently robust to match requirements. The future pace of battle should not be hampered by shortages of materiel resources.[92]

There is a diminishing capacity of Army divisional combat units to sustain themselves, increasing the level of dependency on the COSCOM. Division XXI requires much greater echelon above division (EAD) support for sustainment than the AOE heavy division.[93] What is currently on the table is a goal of just-in-time supply support with less amassed in theater, versus a just-in-case system used throughout U.S. Army history and most recently during the Gulf War. The risks are vast, for the "just-in-time" system places a tremendous reliance on information-based technologies, and assured

communications.[94] All of the needed systems are currently not available to the force, and are dependent upon logisticians winning out on the budget debate, a highly unlikely scenario given our long held tradition of "tooth-before-tail." Compounded by the fact the defense budget has declined thirty-eight percent since 1985.[95] All of this fantastic dialogue of leveraging technology to achieve greater performance with less does not even include the simple fact that "the wholesale introduction of state of the art information technologies will give rise to new and unexpected Clausewitzian friction."[96] And the second and third order consequences of new technologies in warfare are never predictable with any amount of accuracy.[97] This next part briefly examines a few of the critical "Third Wave" technologies that are required to help make Force XXI a reality.

## Third Wave Logistic Technologies

> "The relationship between doctrine and technology is subsumed in the reciprocity between military theory or concept and desire for-or emergence of enhanced or increased capabilities."[98]

Alvin and Heidi Toffler's book War and Anti-War suggests warfare is entering the Third Wave where power is technologically information based. The linking of technologies with new operational concepts remains the same today as they were years ago. The failed Pentomic division is a prime example because the technology trailed behind doctrine, and strategic thought moved way ahead of tactical requirements.[99] The future military logistics system will attempt to leverage existing and evolving technologies to meet what it expects are the future requirements of generating, projecting, and sustaining military forces. The medium needed to get the Army to this point is automation and communication.

Automation and communication are the two key binding mechanisms that link the

strategic, operational, and tactical domains. Source data automated systems and networked systems spanning from the CONUS base to the theater of operations will be needed to enable COSCOM commanders and other logistic decision-makers to be responsive to the operational and tactical commanders needs. Land-based communications systems will be important, but a greater reliance will be placed on space-based communications systems. The requirements to send and receive data over greater extended distances and difficult geography will be the norm.[100] The author contends there are two key components to the future information-based logistics network: Global Combat Support System (GCSS), and the Combat Service Support Control System (CSSCS). GCSS is the principal driver to achieving logistics information superiority on the future battlefield. Yet, this notion of information superiority is a questionable, for even in an information-rich environment, there is only so much that any human can absorb, digest, and act upon in a given period of time.[101] This next part provides a brief overview of GCSS-Army, the Army's version of GCSS and the challenges that lie ahead for full integration of the system.

GCSS-A is projected to result in near-real time command and control of the logistics pipeline. "[GCSS-A] will provide one fused picture of combat support to the warfighter, and a closed link between command and control and combat support during any operation or mission."[102] If the system works as envisioned, a secure network will be in place providing the user access to shared data, applications, and administration.[103] Herein lies a significant consequence of over reliance on technology. Too much dependency, coupled with the steady expanded use of information-based systems opens the door for subtle manipulation of "situation awareness" by a determined adversary.[104]

The system provides the commander the capability to anticipate and submit requirements across all levels of support.[105] These anticipatory capabilities will be achieved in part through teaming GCSS-A with vehicle-based sensors, Force XXI Battle Command Brigade and Below (FBCB2), and CSSCS.[106] One of the potential pitfalls of the system is that it builds on the functions and the processes of current information systems rather than on new systems. This shortcoming relating specifically to a 1996 RAND study, which identified significant data quality problems within Army logistics information systems. The report recommended that an improvement needed to be made in all parts of the Army's logistics information network to achieve Force XXI reality.[107]

Currently the GCSS-A design integrates current logistic systems into a common language and operating environment. From a critical operational perspective, finally moves toward a joint capability still many years away and not projected until the year 2006.[108] While the road forward is not going to be easy, there are events that could derail timely integration of the system. First, technological innovation moves at the speed of light, and making future hardware compatible with older systems may prove to be very problematic. Secondly, joint capability and integration with the Global Command and Control System will require extensive joint effort between the Services.[109]

CSSCS currently in the process of being fielded is a decision support tool. Again, a cautious view is warranted since previous efforts to build a computerized decision support tool were hung up because of inadequate data.[110] A problem that was found in the 1996 RAND study on data quality. Nonetheless, CSSCS is designed to provide several important capabilities: current CSS status of subordinate units and supply points, a planning tool for planners, input to the relevant common picture (RCP) for non CSS

commanders and reception of a portion of the RCP from other battlefield functional area control systems. The information is tailored to flow through corps to the strategic level via the Global Command and Control System. The bottom line is that the soldiers still remain the key to successful use of the system, for it is highly dependent on accurate and timely updates from the user.[111]

In summary, future operations will be faster and more lethal, and conducted over extended lines of communications on an expanding battle space. Simply knowing the requirements through use of information-based systems will not be enough. Logistic organizations, specifically the COSCOM will need to possess the physical means to match requirements. This means an infusion of logistical support assets to provide the COSCOM greater mobility and sustainability. Old logistics paradigm must be supplanted along with the tooth to tail principles of yesterday. The goal should be to field the most effective and efficient Army based on requirements. If the COSCOM is to serve as theater level logistics manager, it must possess organically the resources to execute those missions. The practice of ad hoc configuration is to slow and inefficient to respond to the demands of the future environment. The Force XXI environment demands a new look for the COSCOM.

COSCOM units must be rapidly tailorable, manned and equipped in peace time at the highest authorized levels of organization, and augmented with information-based technologies. Corps logistic units must be comprised of excellent communications and sufficient mobility and sustainment support technologies. The tradition of relying on HN support to fill logistics shortfalls is too much of a risk in an uncertain geo-strategic environment. The Army should also not rely solely on leveraging information-based

technologies to help mitigate force composition shortfalls. For example, the two key components of the future information-based logistics network: GCCS-A, and CSSCS support the idea of gaining logistics information superiority on the battlefield. However, human cognition accompanied by new manifestations of Clausewitzian friction, and actions of our future potential adversaries should help illustrate the potential pitfalls of becoming over reliant on technologies.

## CHAPTER IV: CONCLUSION

The COSCOM in its current configuration cannot efficiently and effectively serve as a theater level logistics manager in a single corps Force XXI type contingency operation. The operational logistic requirements of reception, positioning of facilities, materiel management, movement control, distribution management, reconstitution/regeneration, and redeployment would overwhelm a COSCOM. Studies and evidence even suggest that the COSCOM is not fully capable of performing its original tactical mission, never mind an operational level one. Fundamental reasons for this dilemma are that the COSCOM is not sufficiently organized, manned, and equipped to perform its doctrinal missions. ODS and Operation Restore Hope are two relatively recent operations which have underscored some of the fundamental organizational shortfalls within the COSCOM. The Army's penchant to form ad hoc units to execute the operational logistic sustainment component of military operations is unresponsive and lacks continuity of support.

Evidence supports the idea espoused in joint logistics doctrine that the ideal logistics organization should not require a fundamental change to manage the transition

from peace to war. Building ad hoc logistics organizations to meet mission requirements degrades the capability of all units effected. The goal should be to move away from improvisation as the overarching principle of support on the future battlefield. The logistics doctrine and organizations for the future should attempt to match reality. Active component logistic units need to be more robust. The Army cannot rely on the reserve forces to fill the void in active component logistic units. Presidential call-ups of the reserves are not guarantees and subject to the vagaries of the political climate. Therefore, force modernization in the next century should be centered on achieving the right balance of logistics forces to create the most effective and efficient force possible. Also leaning heavily on information-based technologies to supplant for the lack of robustness to sustain future military operations is the wrong direction to take.

Future military operations will be faster and more lethal, conducted over extended lines of communications and an expanded battle space. Simply having information-based knowledge of the requirements will not be enough. The COSCOM's need to be robust enough to get the right quantities of materiel to the right place and at the right time. LUPS in the eighties took the Army down the road of looking at technology to achieve certain outcomes and it failed. The program's stated goals of introducing productivity enhancing initiatives to the force to offset reductions in logistics force structure failed. As the military logistics community looks more toward technology to find the solution to complex military problems, a direct relationship exists for the increased probability of a subtle manipulation of our information-based systems by a determined enemy. Therefore COSCOM units should be augmented by information-based technologies, but not built around them as some may suggest. Reserve logistic forces should be equipped

to the same levels of robustness as the active component. Waiting on unproven technologies may be too late when the proverbial balloon goes up and the time comes to launch into a major regional conflict. Corps logistical units formed in crisis to meet the operational commander's requirements are risky ventures. Military force planners would do well to remember Benjamin Franklin's celebrated maxim:[112]

> For want of a nail, the shoe was lost-for want of a shoe, the horse was lost-for want of a horse the rider was lost-for want of rider the battle was lost.'

## NOTES

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