

# **Transforming for Distribution Based Logistics**

**A Monograph**

**by**

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## ABSTRACT

TRANSFORMING FOR DISTRIBUTION BASED LOGISTICS by MAJ Cofield Bleu Hilburn, Transportation Corps, U.S. Army, 45 pages.

Lieutenant General Christianson, Army G-4, in his White Paper, *Joint and Expeditionary Logistics for a Campaign Quality Army*, urgently calls for “a single focus on the simple task of guaranteeing delivery--on time, every time. The Army must have a distribution system that reaches from the Soldier at the tip of the spear to the source of support, wherever that may be.” Unfortunately, our current Army logistics organizational structure does not facilitate effective distribution. It creates inefficiencies through organizational seams and sub-optimization.

Military distribution is defined as ‘the activities that enable the flow of material from the source to the end user, or from end to end, to include transportation or movement, distribution inventory, warehousing, packaging, materials handling, and order entry.’ These activities serve to ensure that the right things are delivered to the right place at the right time. In the Army, these activities are performed by a variety of different organizations, commands and echelons.

Fortunately the logistics community is beginning to discuss distribution holistically as opposed focusing on individual branches. Viewing supply and transportation not as separate functions on the battlefield but as two elements of a common distribution system is the basis for distribution-based logistics (DBL). Similarly, Army units that conduct distribution must be unified under a single command that manages the distribution system from source to end-user.

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## INTRODUCTION

In the last fifteen years the world has undergone revolutionary changes resulting in the emergence of the United States as a cultural, economic, and military hegemony. Among the most critical changes are the end of the Cold War, the increased prevalence of non-state entities, and the advent of the Information Age. The impact of these changes on the military and the conduct of war have been dramatic. As a result, the Army has embarked on a campaign of transformation.

This study examines the transformation of the Army's logistics structure by exploring the improvement of one of its key focus areas: distribution. Army logistics units are currently organized primarily according to traditional command structure. The traditional structure does not facilitate effective distribution, and creates inefficiencies through organizational seams and sub-optimization. Army units that conduct distribution must be unified under a single command that manages the distribution system from source to end-user.

### **Army Transformation**

First announced by former Army Chief of Staff, General Eric Shinseki, at the 1999 Association of the United States Army (AUSA) symposium, the Army's focus on transformation intensified significantly after the 11 September attacks, and the subsequent wars in Afghanistan and Iraq. This unanticipated Global War on Terrorism (GWOT) brought urgency to transformation efforts. Transformation suddenly took on a life or death context.

### **"Twenty Dollar Bills"**

On October 4, 2004, the current Chief of Staff, General Schoomaker, made the analogy that the Army was organized in 100-dollar bills, while twenties were needed in the current Global War On Terror (GWOT), while speaking on joint and expeditionary capabilities.<sup>1</sup> Essentially,

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<sup>1</sup> Chief of Staff of the Army, General Peter Schoomaker, CSA Interview, Joint and Expeditionary Capabilities, Pentagon, Washington, DC, 4 October 2004.

under the current force structure, although described as a division based Army, the smallest deployable element able to logistically sustain itself is a corps. In the Army's current force structure, a battalion relies upon logistics from a brigade for support, thus it is not practical to deploy the battalion without the brigade. Meanwhile, in order to support its subordinate battalion, a brigade requires support from a Division Support Command (DISCOM). DISCOMs and brigades receive support from corps logistics units. Under the Army's current logistics structure, in order to provide necessary support to a battalion-size element, some corps or theater logistics units are required. Further, since deployed maneuver elements may be battalion-sized and a Corps Support Command (COSCOM) is designed to support multiple divisions, an ad hoc organization, made up of the required elements of corps logistics units would be deployed.

General Schoomaker's twenty-dollar bill analogy was a timely call for the transformation of the Army into smaller, modular units. Under transformation, the unit of modularity or Unit of Action (UA) in the Army will move from a forty thousand soldier corps to a five thousand-man brigade. According to General Schoomaker, the Army is "increasing the number of active-duty combat brigades from 33 to 43 or more, while reducing the Army headquarters layers to two, one at the theater level and one to conduct the tactical fight."<sup>2</sup>

Transformation of the maneuver forces is proceeding at a rapid pace. Units are receiving new equipment, reorganizing in concert with the UA concept, and are developing new doctrine. The Army has already fielded two Stryker Brigade Combat Teams (SBCT), an interim transformational unit, one of which was used in combat as recently as the November 2004 assault on Falluja.<sup>3</sup>

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<sup>2</sup> Chief of Staff of the Army, General Peter Schoomaker, White Paper Introduction, *Joint and Expeditionary Logistics for a Campaign Quality Army* (Washington, DC: Government Printing Office, 12 August 2004), 1.

<sup>3</sup> Michael Evans, Defense Editor, "Task needs 'overwhelming force'," TimesOnline, 2 November 2004, Available from <http://www.timesonline.co.uk>, Internet, Last accessed on 2 March 2005.

## Logistics Transformation

Transformation in the logistics community has been somewhat slower than that of the maneuver forces. One reason for this is the need to have a basic concept of the transformation of maneuver units before designing a support structure for those forces. The transformation of logistics units naturally lags behind combat arms. This is evident in the fact that, as mentioned above, transformational maneuver units are already fielded and employed, while logistics transformation is still being debated.

Despite its relatively slow pace, however, Army leadership emphasizes the need to transform logistics. General Schoomaker, in his endorsement of the *Joint and Expeditionary Logistics for a Campaign Quality Army*, White Paper, writes “logistics transformation is critical as the Army adapts to the new realities.”<sup>4</sup> As a result, in December 2003, Lieutenant General Claude V. Christianson, Deputy Chief of Staff of the Army, G-4, published the Army Logistics White Paper, *Delivering Materiel Readiness to the Army*, in which he implored the Army logistics community to “enhance its current capabilities while transforming Army Logistics for tomorrow.”<sup>5</sup>

Lieutenant General Christianson’s guidance for enhancing capabilities and transforming Army logistics was to focus on four areas. The first focus area, ‘connect Army logisticians,’ concerns improving communications, and information technologies capabilities. Focus area two calls for a modernization of distribution at the theater level and a move towards Distribution-Based Logistics (DBL). The third focus area, ‘Improve Force Reception,’ is geared towards improving deployment and the traditional Reception Staging Onward movement and Integration

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<sup>4</sup> Chief of Staff of the Army, White Paper Introduction, 1.

<sup>5</sup> Deputy Chief of Staff of the Army, Lieutenant General Claude V. Christianson, Army Logistics White Paper, *Delivering Materiel Readiness to the Army*, December 2003, 1. Available from [http://www.army.mil/features/LogWhitePaper 2004/LogWhitePaper.pdf](http://www.army.mil/features/LogWhitePaper%202004/LogWhitePaper.pdf), Internet. Last accessed on 2 March 2005.

(RSOI) process. Finally, focus area four, 'Integrate the Supply Chain' concerns optimizing the flow of materiel from the source to the end-user.<sup>6</sup>

Lieutenant General Christianson is very clear on his assessment that the Army's current ability to perform theater distribution is not acceptable. In his explanation of "focus area two" he states that "(w)e do not have the battlefield distribution system that we need. We cannot provide time-definite delivery schedules, and we cannot effectively control physical movements across the new battle environment."<sup>7</sup>

He also introduces Distribution-Based Logistics as conceptual solution; "effective theater sustainment rests solidly on the fundamental concepts of distribution-based logistics." RAND Corporation, a nonprofit institution that performs research and analysis to help improve policy and decision making, in their study *Combat Service Support Transformation Emerging Strategies for Making the Power Projection Army a Reality* explains the goal of Distribution-Based Logistics simply as aiming "to provide equal or better CSS capabilities with fewer unit resources and supplies through better distribution rather than through stockpiles of supplies held and carried around by units."<sup>8</sup>

## **Transforming For Distribution-Based Logistics**

This study focuses on the organization of Army units that provide distribution-based logistics, and examines how those units should transform in order to progress towards Lieutenant General Christianson's focus areas two and four: 'Modernize Theater Distribution,' and 'Integrate the Supply Chain' through Distribution. Though Lieutenant General Christianson provides guidance as to how the Army will conduct logistics in the future, the question remains as to how should logistics units be transformed to better perform distribution-based logistics? In the

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<sup>6</sup> Ibid.

<sup>7</sup> Ibid., 4.

<sup>8</sup> Eric Peltz, John M. Halliday, and Steven L. Hartman, *Combat Service Support Transformation Emerging Strategies for Making the Power Projection Army a Reality* (Santa Monica, CA: RAND, 2003), x.

following chapters, this monograph will demonstrate that the organizations that conduct distribution must be unified under a single command that will manage the distribution system from source to end user.

Chapter 1 examines distribution as a concept, exploring several definitions of distribution from the military and academia. It also examines the basic distribution process, and extracts elements of distribution and distribution management. Finally characteristics of an effective Army distribution organization are derived and presented. Chapter 2 demonstrates how the current organization of logistics units is inadequate for DBL. It does so by highlighting logistics shortcomings in OIF and by examining the current structure based on the characteristics of an effective distribution organization presented in chapter 1. Chapter 3 presents two examples of new logistics organizational structures, each of which has a distribution-focused mission. The first is the Sustainment Brigade (Theater Distribution) proposed by the Combined Arms Service Command (CASCOM) as part of the new Theater Sustainment Command. The second is an approved fielding of a Surface Distribution and Deployment Command (SDDC) container management element that will eventually evolve into a Distribution Management Element. Each organization is examined based on their ability to provide centralized command, with an end-to-end focus, and whether or not they have a modular organization. The monograph concludes in chapter 4 with recommendations based on the research presented in this study of how the Army should organize logistics units for distribution-based logistics.

## CHAPTER ONE

### DISTRIBUTION DEFINED

Distribution, like logistics, is a word with a variety of connotations and definitions, several of which will be presented here. It is arguable that logistics, in its current military usage is too broad a word to adequately define a specific function. To some in the Army, logistics encompasses almost any military function that is not combat arms. Thus, logistics units often perform a variety of arguably unrelated functions. As the Army transforms to better perform distribution based logistics (DBL) it is important to specifically define the concept of distribution and identify its elements and functions in order to ensure that it is reorganized accordingly.

#### Distribution According to Doctrine

Unfortunately the doctrinal definition of distribution can hardly be characterized as specific. According to the Department of Defense (*DoD Dictionary of Military and Associated Terms*) distribution is “the operational process of synchronizing all elements of the logistic system to deliver the “right things” to the “right place” at the “right time” to support the geographic combatant commander.”<sup>9</sup> Although the basic statements of end-state “to deliver the “right things” to the “right place” at the “right time” is accurate and useful, to say that distribution is a “process of synchronizing all elements of the logistics system” is not.

By defining distribution as a “process of synchronization,” the DoD dictionary implies that distribution is simply a managerial function. In fact, distribution consists of a variety of physical and managerial activities. Although the synchronization of certain elements of the logistics system certainly contributes to distribution, forklift operators, truck drivers, longshoremen, container stuffers, and pallet builders are the ones that actually distribute. That the aforementioned are included in “all elements of the logistic system” is true; however, so are

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<sup>9</sup> Chairman, Joint Chiefs of Staff, Joint Publication 1-02, *DoD Dictionary of Military and Associated Terms* (Washington, DC: Headquarters, Department of Defense, 2004).

cooks and mechanics, neither of which performs distribution tasks. Thus the DoD emphasis on synchronization undermines the importance of the physical elements of distribution, while the inclusion of “all elements of the logistics system” is inaccurate.

The definition of a distribution system, found in the same publication, is much more useful. It defines a distribution system as “that complex of facilities, installations, methods, and procedures designed to receive, store, maintain, distribute, and control the flow of military materiel between the point of receipt into the military system and the point of issue to using activities and units.”<sup>10</sup> The utility of this definition is that it provides parameters for a more specific definition of distribution. The ‘ends’ of the ‘end-to-end’ system are established as the point that the materiel enters the military system to the using activities or units.

## **Distribution According to Academia**

The Army’s current concept of military distribution stems from the commercial concept of ‘physical distribution.’ Physical distribution was defined as early as 1948 by the American Marketing Association (AMA) and was specifically differentiated from distribution in order to avoid confusion due to other common usages of the term, as in economic theory.<sup>11</sup> Since the AMA’s introduction of the term, several accepted definitions have emerged.

The authors of *Contemporary Logistics*, a standard setting textbook in the field of Logistics, define physical distribution simply as “the flow of materials from the end of the assembly line to the customer.”<sup>12</sup> Despite its simplicity, this definition is among the most precise and is easily translatable to military usage.

John J. Coyle and Edward J. Bardi, in their groundbreaking book *The Management of Business Logistics* contend that physical distribution is synonymous with business logistics and

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<sup>10</sup> Chairman, Joint Chiefs of Staff, Joint Publication 1-02, D.

<sup>11</sup> James L. Heskett, Nicholas A. Glaskowsky, Jr., and Robert M. Ivie, *Business Logistics*, 2nd ed. (New York: The Ronald Press, Co., 1973), 10.

<sup>12</sup> James C. Johnson, Donald F. Wood, Daniel L. Wardlow, and Paul R. Murphy, Jr., *Contemporary Logistics*, 7th ed. (Upper Saddle River, NJ: Prentice Hall, 1999), 563.

define it as “the movement and storage functions associated with finished goods from manufacturing plants to warehouses and to customers.”<sup>13</sup> Their association of physical distribution with business logistics notwithstanding, this definition is consistent with the one provided in *Contemporary Logistics*, the only difference being that Coyle and Bardi specifically mention the movement to warehouses in addition to the customer. Coyle and Bardi provide more detail in their definition of business logistics. They define it as “the systematic and coordinated set of activities required to provide the physical movement and storage of goods (raw materials, parts, finished goods) from vendor/supply services through company facilities to the customer (market) and the associated activities--packaging order processing, and others--in an efficient manner necessary to enable the organization to contribute to the explicit goals of the company.”<sup>14</sup> Despite the fact that this definition approaches physical distribution (synonym with “business logistics”) from a manufacturing perspective, it is particularly useful as it begins to identify the specific processes and actions that are associated with distribution, specifically movement, storage, packaging, and order processing. It is also significant that it emphasizes efficiency, a common theme in military distribution.

In yet another widely accepted text, *Introduction to Materials Management*, J. R. Tony Arnold refers to distribution as ‘Physical Supply/Distribution.’ He writes “physical supply/distribution includes all the activities involved in moving goods, from the supplier to the beginning of the production process and from the end of the production process to the consumer.” He lists the following activities involved in the distribution process: transportation, distribution inventory, warehousing, packaging, materials handling, and order entry.<sup>15</sup> Arnold’s physical distribution activities translate directly into elements of the military distribution system.

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<sup>13</sup> Edward J Bardi, and John J. Coyle, *The Management of Business Logistics* 3rd ed. (NY: West Publishing Co., 1984), 509.

<sup>14</sup> *Ibid.*, 501.

<sup>15</sup> Tony J. R. Arnold. *Introduction to Materials Management*, 3rd ed. (Upper Saddle River, NJ: Prentice Hall, 1998), 9.

Bardi and Coyle's association of physical distribution with "business logistics" and Arnold's indication that supply and distribution are interchangeable illustrate a contemporary lack of precision, in academia, commercial industry, and the military, in defining the specific elements of a distribution system. In addition to supply and logistics, distribution is also often associated with transportation, evidenced by C. J. Murphy's book *Transport and Distribution*, in which the two terms are used almost synonymously and by bestowing US Transportation Command with the ownership of the distribution process.<sup>16</sup> These common associations are significant not in their contribution to the definition of distribution but in their indication that the activities of supply, distribution, and transportation, and are all interrelated elements of a larger logistics system.

## **Distribution Defined**

Synthesizing the commonalities of the various denotations of distribution renders a more specific definition as 'the activities that enable the flow of material from the source to the end user, or from end to end, to include transportation or movement, distribution inventory, warehousing, packaging, materials handling, and order entry.' In a doctrinal context, these activities serve to ensure that the right things are delivered to the right place at the right time. This definition will be used for the remainder of this monograph.

## **Elements of Distribution**

An examination of the Army supply process serves to demonstrate how transportation, distribution inventory, warehousing, packaging, materials handling, and order entry contribute to distribution. The first step in the supply process is to establish the requirement for a specific object. This is achieved either through a request process, or more ideally, via predictive systems that anticipate demand of a given commodity based on a variety of factors. In terms of the

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<sup>16</sup> George J. Murphy, *Transport and Distribution* (London: Business Books, 1972), 3.

activities listed in the previous section, establishing the requirement is directly related to order entry. As an analysis of the acquisition process expands this monograph beyond its scope, it is necessary to assume that the requested object is located at a Defense Logistics Agency (DLA) depot. From the DLA depot, distribution is simply a matter of transporting the item to the end user in theater. Under ideal circumstances, transportation would be accomplished by through-putting the object directly from the depot (or even the factory) to the end user. The Army defines throughput distribution as “bypassing of one or more intermediate supply echelons in the supply system to avoid multiple handling.”<sup>17</sup>

Unfortunately, due to a number of limitations the item will almost always pass through several different terminal nodes and travel on several modes before arriving at final destination. These limitations are normally due to resource constraints, the physical limitations of the transportation infrastructure or simple practicality. The DoD definition of node is a “location in a mobility system where a movement requirement is originated, processed for onward movement, or terminated;” and mode is “The various modes used for a movement.”<sup>18</sup> For each mode, there are several means of transport. They are: (a) inland surface transportation (rail, road, and inland waterway); (b) sea transport (coastal and ocean); (c) air transportation; and (d) pipelines.”<sup>19</sup>

A more likely example of distribution would be for the item to be moved by forklift from a shelf at a DLA depot to the loading dock where it is stuffed into a twenty-foot shipping container. Once loaded in the container, the movement activity begins as the item enters the inland surface mode of transportation. For example the container may be trucked from the depot to a railhead where it is loaded to a train. Both the depot and the railhead are considered distribution nodes. At the railhead, material handling occurs again as the item is trans-loaded from one means of inland transportation (road) to another (rail). The container will likely move

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<sup>17</sup> Headquarters, United States Army, FM 101-5-1, *Operational Terms and Graphics* (Washington, DC: Government Printing Office, 1997).

<sup>18</sup> Chairman, Joint Chiefs of Staff, Joint Publication 1-02, N.

<sup>19</sup> *Ibid.*, M.

from the railhead to a seaport; where it will be transshipped from rail to another mode of transportation--sea. The object requires material handling again, and a certain degree of warehousing or storage as well, since the container will likely be placed in a yard initially to wait vessel arrival and load time. Likewise after ocean transit, the container will normally be discharged into a yard to await follow-on conveyance. The container will then be transshipped to some means of inland transportation for movement to a distribution center, where it will be stripped, and its contents sorted according to final destination. Finally the item will be transported to its end user. This distribution process is hereby referred to as case one.

Examining the distribution process illustrated above in the context of the previously derived definition identifies eight elements of distribution and distribution management that together form the distribution system. Clearly all of the physical distribution activities including order entry, distribution inventory, packaging, materials handling, transportation or movement, and warehousing, are elements of Army distribution. In the interest of specificity, transportation may be reduced further to three sub-elements. FM 55-10, *Movement Control*, presents the three sub-elements of a transportation system as mode operations, terminal operations, and movement control.<sup>20</sup> As movement control is a managerial function, it may be considered an element of distribution management. Likewise, order entry and distribution inventory are controlled through the materiel management system. Thus materiel management can also be considered an element of distribution management. Thus the elements of a distribution system are: (1) order entry, (2) distribution inventory, (3) warehousing, (4) materiel handling, (5) mode operations, (6) terminal operations, (7) movement control, and (8) materiel management.

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<sup>20</sup> Headquarters, Department of the Army, FM 55-10, *Movement Control* (Washington, DC: Government Printing Office, 1999), 2-2.

## Characteristics of An Effective Distribution Organization

### Centralized Command

The ability to exercise centralized control of all the elements of a distribution system is widely recognized as a key characteristic of an effective distribution organization. G. J. Murphy, author of *Transport and Distribution*, asserts that the ideal structure of a distribution department (analogous to an Army organization or unit) would be for “all the functions affecting each other directly come under the overall control of one department or man.”<sup>21</sup> In military terms ‘one department or man’ implies a single command or commander.

Joint doctrine, as encapsulated in Joint Publication 4-01.4, *Joint Tactics, Techniques, and Procedures for Joint Theater Distribution*, echoes Murphy’s emphasis on centralized control. It lists the three tenets of joint theater distribution as first control, then visibility and capacity. The same publication lists the eight fundamental principles of distribution as: centralized management, optimize the distribution system, velocity over mass, maximize throughput, reduce customer wait time, maintain minimum essential stocks, maintain continuous, seamless, two-way flow of resources, and achieve time definite delivery. Centralized management, the first of these eight principles, is explained as being “essential to efficient and effective joint distribution operations. It involves the integrated end-to-end visibility, capacity and control of the distribution system and the distribution pipeline flow.”<sup>22</sup>

Martin Christopher, in the 1972 book *Marketing Logistics and Distribution Planning*, points out the consequences of not centrally controlling distribution.

Physical distribution has been characterized as a process incorporating many functions. In the case of physical distribution, however, it was traditional among business firms to maintain these functions as separate entities reporting to different areas within the company, without the necessary organizational ties to

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<sup>21</sup> Murphy, 180.

<sup>22</sup> Chairman, Joint Chiefs of Staff, Joint Publication 4-01.4, *Joint Tactics, Techniques, and Procedures for Joint Theater Distribution* (Washington, DC: Government Printing Office, 2000), 1-7.

breach the gap, except on a haphazard basis. . . . The result was inevitable. Each area served its own master and its own goals, without heed for the other--‘sub-optimization’ in systems terminology.<sup>23</sup>

Christopher goes on to explain that distribution organizations need centralized control because “few decisions can be made in distribution which do not affect more than one field at a time. The important point is that none of these factors can be considered in isolation: they must be considered together as a systemic entity.”<sup>24</sup> This can best be accomplished by placing the units that actually perform distribution together under a single centralized distribution command, which has a systemic understanding of the entire distribution system.

## End-to-End Focus

Distribution is a holistic process encompassing all activities that enable the flow of material from the source to the end user, or from end-to-end. Thus commands that do not possess an end-to-end focus are not likely to effectively influence the distribution process. This characteristic of an effective distribution organization is also alluded to in Joint Publication 4-01.4, *Joint Tactics, Techniques, and Procedures for Joint Theater Distribution*. Under the principle “maintain continuous, seamless, two-way flow of resources,” Joint Publication 4-01.4 contends that integrated command and control, and communications networks will provide connectivity between the strategic, tactical and operational levels that will culminate “in the end-to-end continuum of a distribution-based logistics system.”<sup>25</sup>

The U.S. Army Training and Doctrine Command (TRADOC) in the latest draft of Pamphlet 525-4-01, *Distribution Operations for the Future Force* also stresses a seamless end-to-end focus in the five future force pillars of distribution: transparent end-to-end distribution (continuum); single distribution manager; holistic distribution management and control;

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<sup>23</sup> Martin Christopher, and Gordon Wills, *Marketing Logistics and Distribution Planning* (New York: Allen and Unwin, 1972), 335.

<sup>24</sup> *Ibid.*, 336.

<sup>25</sup> Chairman, Joint Chiefs of Staff, Joint Publication 4-01.4, 1-8.

command discipline; and joint, interagency and multinational (JIM) process component. In the explanation of ‘transparent end-to-end distribution (continuum); TRADOC contends that distribution must be “treated as an inherently ‘end-to-end’ process” and that their concept “seeks to minimize the impact of seams in the distribution network, e.g. strategic to operational to tactical, and continental United States (CONUS) to theater.”<sup>26</sup>

Removing the seams in the distribution network specifically from strategic to operational to tactical or from CONUS to theater, to brigade, is key to optimizing the effectiveness of distribution. Schary’s observation that organization by specific functions of a distribution system leads to sub-optimization is likewise true for organization by traditional military echelon. In the past, strategic distribution organizations have only been responsible for getting the item to the theater of operations. Military Traffic Management Command (MTMC), the predecessor of the Surface Distribution and Deployment Command (SDDC), managed the transportation of an item only as far as the seaport of debarkation (SPOD). From the SPOD, theater distribution assets would be responsible for moving the item to a corps, which would move an item to a division, and so on down the line to the user. The problem with this system is that practices that are optimal for one echelon may be detrimental to others, or to the system as a whole. A good example as to how a particular process may be optimal for one echelon of the distribution system but detrimental to another is the shipment consolidation process. Traditionally, pallets or shipping containers were built with items going to a single supply support activity. This type of consolidation was optimal at the strategic level because it conserved strategic transportation assets and minimized the time required to accumulate sufficient items to consolidate. Unfortunately, this practice was inefficient at the theater level since almost all pallets had to be broken down and rebuilt for onward movement from the Supply Service Area (SSA). This

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<sup>26</sup> U.S. Army Training and Doctrine Command, TRADOC Pamphlet 525-4-01, *Distribution Operations for the Future Force, World Wide Staffing Document*, Final Draft (Washington, DC: Government Printing Office, 21 June 2004), 23.

requirement greatly increased the handling and more importantly, customer wait time.

Fortunately the DDC responded by adopting a more end-to-end focus by developing the pure pallet initiative (PPI) in which pallets were held longer so that shipments could be consolidated for a specific consignee instead of the theater in general. The result of this end-to-end approach was a much more effective distribution system, with reduced costs, handling and customer wait time overall.<sup>27</sup>

## Modularity

Finally, an effective distribution organization, specifically in the context of the U.S. Department of Defense, must be modular. The Army defines modularity in FM 101-5-1, *Operational Terms and Graphics*, as “force elements that are interchangeable, expandable, and tailor-able to meet changing missions and needs.” It further, asserts that “modular units will combine the assets required to provide a support function or group of related functions,” and that “a module can be sent to support a deploying force without adversely affecting the ability of the parent unit to function at a reduced level.”<sup>28</sup>

In the contemporary operating environment, the U.S. Army can expect to perform a wide array of missions ranging from full-scale combat against other nation-states, to small humanitarian assistance and nation building efforts. The size of the required ground force for each respective mission will vary greatly. According to the *Army Comprehensive Guide to Modularity*, a product of TRADOC’s Task Force Modularity the solution is to shift from a “division based Army” to a “brigade based Army.”<sup>29</sup>

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<sup>27</sup> L. Hornung, Fact Sheet, *Pure Pallet Process* (Susquehanna, PA: Defense Distribution Center, 21 November 2004).

<sup>28</sup> Headquarters, U.S. Army, FM 101-5-1, *Operational Terms and Graphics* (Washington, DC: Government Printing Office, 1997).

<sup>29</sup> Chief of Staff of the Army, *Army Comprehensive Guide to Modularity*, version 1.0 (Fort Monroe VA: Government Printing Office, October 2004), 1-6.

Shifting to a modular 'brigade based Army' entails providing the brigade with the required sustainment and support assets to operate without a parent division or corps. In the past army maneuver units were organized on a branch specific basis and then task organized into company teams, battalion task forces and, brigade combat teams for a specific combat mission. In the interest of becoming more modular and stand-alone, task organization is now permanent at the brigade level where the Army has fielded Brigade Combat Teams (BCTs) as deployable, self-sustainable entities.

The current concept is for each BCT to have a Brigade Support Battalion (BSB). BSBs will be capable of managing distribution from the brigade support areas (BSA) to the forward line of troops (FLOT). The BSB is designed for the most part on the model of the legacy Forward Support Battalion, and Main Support Battalion, and utilizes a brigade level distribution system that is field-tested and reliable.

As the concept is to move from a "Division-Based To Brigade-Based Army," distribution units at echelons above the brigade must be likewise modular and task organized to support a variety of force options. By definition they must be tailorable, interchangeable, and expandable. They must also have the ability to distribute materiel to the BCT level without the need for an intermediary echelon.

## SHORTCOMINGS OF THE CURRENT DISTRIBUTION ORGANIZATION

### How OIF demonstrates the need for DBL

The very nature of the military campaign to overthrow Saddam Hussein's regime in Iraq posed a special challenge for logistics. Several factors were relatively unique to OIF, such as the decision to flow units and equipment into theater with deployment orders, instead of using the tried and true Timed Phased Force Deployment Data List (TPFDD); the current force composition with 45 percent of the all Army combat service support units located in the reserves; the unprecedented pace and reach of the ground war; and the pre-war trend in military logistics towards inventory reduction and just in time delivery systems.<sup>30</sup> All of these OIF-unique factors contributed significantly to logistics challenges.

The General Accounting Office (GAO) revealed the severity of logistics failures in OIF in their *Preliminary Observations on the Effectiveness of Logistics Activities during Operation Iraqi Freedom*. William M. Solis, Director, Defense Capabilities and Management, in his cover letter for the November 2003 report, concludes that "although major combat operations during the initial phases of OIF were successful, our preliminary work indicated that there were substantial logistics support problems in the OIF theater."<sup>31</sup> As evidence for his statement, he provides eight examples of logistical problems that occurred in the course of the operation. Significantly, each of the eight problems he cited represented not only failures in the overall logistics system, but specifically failures in distribution:

A backlog of hundreds of pallets and containers of materiel at various distribution points due to transportation constraints and inadequate asset visibility; a discrepancy of \$1.2 billion between the amount of materiel shipped to Army

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<sup>30</sup> Global Security, *US Army Reserve*, Available from <http://www.globalsecurity.org/military/agency/army/usar.htm>, Internet, Last accessed on 2 March 2005.

<sup>31</sup> General Accounting Office, *Defense Logistics: Preliminary Observations on the Effectiveness of Logistics Activities during Operation Iraqi Freedom* (Washington, DC: Government Printing Office, 2003).

activities in the theater of operations and the amount of materiel that those activities acknowledged they received; a potential cost to DOD of millions of dollars for late fees on leased containers or replacement of DOD-owned containers due to distribution backlogs or losses; the cannibalization of vehicles and potential reduction of equipment readiness due to the unavailability of parts that either were not in DOD's inventory or could not be located because of inadequate asset visibility; the duplication of many requisitions and circumvention of the supply system as a result of inadequate asset visibility; and the accumulation at the theater distribution center in Kuwait of hundreds of pallets, containers, and boxes of excess supplies and equipment that were shipped from units redeploying from Iraq without required content descriptions and shipping documentation. For example, at the time we visited the center, we observed a wide array of materiel, spread over many acres, that included a mix of broken and usable parts that had not been sorted into the appropriate supply class, unidentified items in containers that had not been opened and inventoried, and items that appeared to be deteriorating due to the harsh desert conditions.<sup>32</sup>

As indicated by the GAO report, the Army logistics system proved problematic in V Corp's rapid push to Baghdad. The Operation Iraqi Freedom Study Group (OIF-SG) in their assessment of sustainment operations in OIF concluded, "most logistics functions and classes of supply during the campaign functioned just barely above subsistence level."<sup>33</sup> The logistics community simply had not anticipated the challenges to distribution that could be generated by moving a corps-sized element from Kuwait to Baghdad in such a short period of time.

U.S. Joint Forces Command's (USJFCOM) Joint Lessons Learned: "Operation Iraqi Freedom Major Combat Operations" supports OIF-SG's conclusions about OIF logistics performance. The Joint lessons learned refers to logistics automation systems as "disparate" and "stove-piped."<sup>34</sup> The term 'stove-piped' is often used as a critical description of the lack of interaction between individual branches within the Army logistics community, and is the antithesis of the 'end-to-end' approach required for DBL.

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<sup>32</sup> Ibid., 2-3.

<sup>33</sup> Gregory Fontenot, Colonel, U.S. Army, Retired, Lieutenant Colonel E. J. Degen, U.S. Army, and Lieutenant Colonel David Tohn, U.S. Army, *On Point, The United States Army in Operation Iraqi Freedom Through 01 May 2003* (Fort Leavenworth, KS: Combat Studies Institute Press, 2004), 408.

<sup>34</sup> U.S. Joint Forces Command, *US Joint Forces Command's Joint Lessons Learned: Operation Iraqi Freedom Major Combat Operations* (Norfolk, VA: Government Printing Office, 2003), 95-96.

One of the main reasons automation systems are stove-piped is that Army units tasked to perform distribution are also stove-piped. The software is designed to meet the specific needs of the user. If an organization has a stove-piped focus, then so will the software designed for its use. Thus the Army has Unit Level Logistics System (ULLS) to requisition supply, the Standard Army Retail Supply System (SARSS) for overall materiel management, The Transportation Coordinator's-Automated Information for Movement System II (TC-AIMS II) to manage transportation, and still other systems to manage other aspects of the logistics system. The fact that the Standard Army Management Information Systems (STAMIS) are stove-piped indicates that the organizational structure of units performing distribution are likewise stove-piped and not organized to provide an end-to-end focus.

The OIF working group reinforced this conclusion in their section on sustainment, by pointing out the need for a single cargo distribution manager:

Perhaps the most important issue contributing to the myriad (of) problems that confounded delivering parts and supplies, from paperclips to tank engines, stems from the lack of a means to assign responsibility clearly. In the current logistics system, there is no single cargo distribution manager. Quite apart from the confusion generated by the separate management of classes of supply, there is currently no one person or unit that is directly responsible for delivery of all things large and small. Just as the Military Traffic Management Command (now SDDT) had to organize units to provide a single port manager capability to TRANSCOM, so must the Army at least consider developing functional cargo distribution capability with the means to track and assure that supplies are distributed.<sup>35</sup>

## **Reemphasis on Distribution**

Largely as a result of the distribution and logistics failures in OIF, the focus of transformation efforts in some circles has shifted from “reducing cost” to ensuring that the soldier has what he needs, when and where he needs it--the essence of DBL. Prior to OIF, logistics

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<sup>35</sup> Fontenot et al., 410.

transformation efforts focused on “power projection goals” and “reducing the cost of logistics while maintaining warfighting capability.”<sup>36</sup> The experiences in OIF have changed this focus.

Early attempts to improve distribution focused on technological solutions and adopting more efficient business practices. Attempts to gain joint total asset visibility (JTAV), through the use of radio frequency (RF) tags, and numerous other tracking systems and software, as well as the previously mentioned, stove-piped STAMIS, all represent attempts to improve distribution by adopting new technologies. The 1995 Velocity Management Initiative (VMI) was intended to shift the Army’s logistics paradigm from a mass based system, where large quantities of materiel were stockpiled at different levels until needed, to a velocity based system where materiel will flow through an efficient distribution system and be delivered to the unit as needed. VMI attempted to accomplish this paradigm shift for the most part, by applying better business practices to the logistics organizations that perform distribution.<sup>37</sup>

Leveraging technology or better business practices to solve the distribution problem is an attractive option as it promises more capability with less cost and manpower without the relatively high cultural resistance that would inevitably accompany major unit reorganizations. George J. Murphy, a pioneer in the art of distribution management, argues that the organizational aspect of distribution “is the most difficult because we are now dealing with people, not abstract ideas.”<sup>38</sup> Unfortunately, as evidenced by OIF, the benefits realized by the application of technological or practical solutions were insufficient. Apparently, the critical variable in the DoD distribution system is the structure of the organizations that actually perform the distribution.

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<sup>36</sup> Eric Peltz, John M. Halliday, and Steven L. Hartman, *Combat Service Support Transformation Emerging Strategies for Making the Power Projection Army a Reality* (Santa Monica, CA: RAND, 2003). Available from <http://www.rand.org/publications/DB/DB425/DB425.pdf>, Internet, last accessed on 2 March 2005.

<sup>37</sup> John Dumond, Marygail Brauner, Rick Eden, John R. Folkeson, Kenneth J. Girardini, Donna Keyser, Ellen M. Pint, and Mark Wang, *Velocity Management: The Business Paradigm That Has Transformed U.S. Army Logistics* (Santa Monica CA: RAND Corporation, 2001). Available from <http://www.rand.org/publications/MR/MR1108/MR1108.sum.pdf>.

<sup>38</sup> Murphy, 177.

Thus, despite cultural resistance, reorganizing logistics units for distribution has become a new focus for logistics transformation.

The first significant change made to logistics organizations with the intent to improve or better facilitate distribution was the development of the Distribution Management Center (DMC) under the Force XXI DISCOM. The DMC is a staff section that provides oversight of the distribution functions of the Materiel Management Center (MMC) and the movement control elements. Under the Force XXI design the DMC “provides total asset visibility (TAV) and in-transit visibility (ITV) of all commodities, movements of units within, assigned or inbound to the division area of operations.” The DMC also serves as the “logistics fusion center to collect and analyze TAV/ITV information.”<sup>39</sup>

Beyond the initial fielding in the Force XXI DISCOM, a DMC has been added to the Theater and Corps Support Commands (TSC, COSCOM). This is significant as it establishes a concept for distribution management: the merging of movement control and materiel management. Unfortunately, as this additional staff section constituted no significant change in the organization of the logistic units actually performing the distribution, it has not in itself solved the distribution problem.

While placing staff elements with a distribution responsibility into a single distribution center may potentially improve headquarters level planning and monitoring, the units actually responsible for distribution remain stove-piped. This is particularly true for echelons above division. At the division level and below, multifunctional organization tends to eliminate the effects of stove-piping. Unfortunately at the corps and theater level, where entire brigade and battalion commands are dedicated to a particular function of distribution such as warehousing, or transportation, the focus tends to be on their own particular mission as an end unto itself. The

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<sup>39</sup> Combined Arms Services Command, *Theater Logistics Handbook 2003*, 5-4. Available from <http://www.almc.army.mil/LEDD/8a-f17/Adobe/V6-I-05%20--20Army%20Transformation.pdf>, Internet, Last accessed on 2 March 2005.

truck battalion concentrates on keeping trucks on the road, their drivers safe, and their missions complete, by the required delivery date (RDD). They lose sight of the overall distribution system that they are supporting, and the overarching goal to provide the user with what he needs when he needs it. In short they sub-optimize.

## **Current Organizations are Ineffective for Distribution**

### **Multiple Independent Organizations Perform Distribution**

Under the current structure in the Department of Defense, a variety of entities, ranging from unit supply clerks to civilian workers at DDC perform distribution. Under the example of distribution process provided in chapter 1, a unit supply clerk performs the initial order entry with informational oversight from division and corps materiel managers. A DLA depot such as the DDC in Susquehanna, Pennsylvania, maintains the distribution inventory and reacts to the order. They subsequently arrange for the item's transportation to theater with SDDC. SDDC will perform almost all mode operations in the continental United States. SDDC also contracts for and manages terminal operations at the seaports of embarkation and debarkation (SPOE/SPOD), and provides movement control for the strategic leg of the item's movement. Once the item completes its ocean transit and arrives in theater, the movement control function shifts from SDDC to a theater movement control agency (TMCA). The TMCA arranges for inland transportation either by commercial contract or through Army theater transportation assets. Although these military mode operators receive taskings from the TMCA, they fall under a different headquarters altogether--either a separate brigade in the Theater Support Command or a separate Transportation Command (TRANSCOM). After leaving the seaport, the item will often pass through a theater distribution center. The Theater Distribution Center, a common, albeit non-standard military organization, is a separate entity, not directly subordinate to any of the other distribution activities. Finally, a corps transportation battalion--a Corps Support Command

(COSCOM) asset, would probably perform the local-haul transportation from the TDC to the end user.

## Centralized Command

As illustrated above, the current system does not provide centralized command as there are various distinct military organizations spanning several echelons of command involved in the distribution of a single item from depot to end-user. These include, but are not limited to the strategic level units, SDDC and DDC; theater level units, TMCA, TRANSCOM, and the TDC; corps level units, COSCOM, and MMC; and division level units, MMC and end user.

The lack of centralized command and management across the many units that manage and perform distribution contributes to many of the inefficiencies that plague the joint logistics community today. It is important that this principle be applied to any proposed or future distribution organization.

Under the current distribution system, at the echelon above division level, logistics units are either lumped together to form support groups or they are separated to form functional, or branch specific, units such as line-haul transportation battalions, or petroleum companies. Neither option is particularly efficient with regards to distribution.

Under the 'support group' construct multifunctional units combine extremely diverse, non-related functions under a single command structure largely on an ad hoc basis. The 29th Support Group's mission includes: "providing DS/GS maintenance and sustainment support, ammunition and explosive ordnance disposal support, theater wide airdrop services, theater aviation intermediate maintenance, support deployment by operating USARUER's power project platform (DPC and Closed Loop Facility), provide trained and ready support modules that are rapidly deployable in as early as 48 hours."<sup>40</sup> Buried in the divergent elements of the 29th's

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<sup>40</sup> 21st Theater Support Command, 29th Support Group, Available from [http://www.21tsc.army.mil/29\\_SG/welcome.htm](http://www.21tsc.army.mil/29_SG/welcome.htm), Internet, Last accessed on 2 March 2005.

mission are theater wide airdrop services, and ‘provide . . . sustainment support,’ both of which involve distribution, as do certain aspects of ‘ammunition . . . support’ and the operation of the deployment processing center (DPC). On the other hand their mission to provide GS/DS maintenance and EOD support are not distribution. While different subordinate units of the 29th Support Group perform certain distribution tasks, other units such as those mentioned in the previous section perform the majority of the distribution functions. Clearly the support group organizational construct, as illustrated by the 29th Support Group, does not provide a Central Command for the distribution system.

The connectivity between the diverse battalions and detachments that form the 29th Support Group is simply one of command structure, and serves no practical purpose other than administrative organization. It is impossible for the organization as a whole to focus solely on distribution, since they are organized to provide command and control for several units performing one or more specific combat service support functions. It is likely that the individual units internal to the 29th Support Group that perform these functions will seek to optimize on a functional rather than systemic basis.

Ad hoc units are common, especially at echelons above corps. In many cases, ad hocery is the most convenient way of organizing many small support elements into a battalion or brigade structure. It is important to understand, however, that combining units of unrelated functions under a single headquarters serves only to facilitate command and control. Having a supply unit and a maintenance unit in the same unit does not, in itself, improve overall logistics performance and definitely does not improve distribution.

Reorganizing these units into seamless distribution commands at echelons above the division or UEx would result in real and significant improvements to the overall distribution system. Transforming the Army logistics units to better perform distribution would entail identifying those units or elements that have a direct distribution mission, and then reorganizing

them into a distribution command. The resulting organization would provide centralized command for the distribution process and go far towards eliminating functional sub-optimization.

## End-to-End Focus

Until recently, the responsibility and control of Army logistics units rarely exceeded the confines of their respective command echelons. Theater units provided support at the theater level, corps units at the corps level, and others. As explained previously the current construct is for strategic level distribution to be performed and managed by units such as SDDC, and DDC, theater level distribution is primarily performed by units resident in the theater support command (TMCA, TRANSCOM, TDC, and others), COSCOM units support the corps and divisions and DISCOM units support individual brigades. Naturally each of these support units focused on optimizing the distribution within their span of control--optimization by echelon.

Measures that have been taken to mitigate optimization by echelon include the exchange of liaisons, and the establishment of formal, multi-echelon distribution meetings, such as the movement control boards (MCB). Unfortunately these measures merely focus on solving symptoms of the problem, most notably poor communication between echelons, and do not address the real issue, which is a poor organizational structure.

Brigadier General Fletcher, Commander of SDDC, in an 8 November interview argued the importance of exploring the manner in which distribution is optimized. He contends that if distribution is in fact optimized on an end-to-end basis (as demonstrated in the previous chapter), then that is how we should be organized.<sup>41</sup> Organizing on an end-to-end basis implies that a single command would be responsible for distribution from the depot to the end user.

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<sup>41</sup> Charles W. Fletcher, Brigadier General, Commander Surface Deployment and Distribution Command, Interview by author, 8 November 2004, Scott Air Force Base, IL., Tape recording, transcript, School of Advanced Military Studies, Fort Leavenworth, KS.

## Modularity

It can be argued that the current logistics force structure is even less modular than that of the maneuver units. The maneuver units at least had precedence for modularity in the traditional brigade combat team task organization and in the different separate cavalry units, almost all of which had a modular design. Unfortunately, corps and theater level logistics units are for the most part still organized on a cold war model designed to provide support to the heavy units defending the German border. Under this organization, it is difficult to tailor a unit to perform a specific mission. As pointed out in the introduction, under the current structure, elements of Corps logistics units must be deployed in an ad hoc manner to support a single brigade or battalion on a deployment. As Corps logistics units are primarily designed to support one or more divisions, it is difficult to deploy an element of an appropriate size and capability to support a brigade without “adversely affecting the ability of the parent unit.”<sup>42</sup> The Army’s current structure does not meet the goal of modularity. The logistics units are built in denominations of 100 dollars rather than 20 dollars.

Examining the 29th support group’s 1995 deployment to the Balkans provides a good example of the current level of modularity. The 29th Task Organized for the mission into “Task Force 29” and deployed to Kosovo with the primary responsibility of Reception Staging and Onward Movement (RSOI) forces arriving to conduct the peacekeeping operations. From their intermediate staging base in Taszar Hungary, the group performed the following operations: “The reception station that inprocesses all personnel into the theater. The life support area that houses thousands of transient troops moving from bases in Germany and the U.S. into the Balkan theater. The container handling area that accepts stores and readies for deployment all containers shipped into this theater. Three separate railheads. An airhead, and numerous direct support supply and

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<sup>42</sup> Headquarters, United States Army, FM 101-5-1.

maintenance activities that provide necessary goods and services to both transient deploying units and tenant units of the Taszar area.”<sup>43</sup>

Comparing the tasks the 29th performed in Hungary with those listed on their mission statement (as described in the section on central control) shows major differences. In fact the majority of tasks performed by TF 29 while deployed do not even remotely resemble their mission or their normal peacetime employment, or their training.

Many of the TF 29’s tasks were, however, functions of distribution. Rail head, and Airport operations (terminal operations), direct support supply activities (order entry, distribution inventory, materiel management, and warehousing) and container management (movement control) all contribute to the overall distribution system. The fact that a logistics support group who’s primary focus is maintenance and ammunition had to deploy to perform obvious distribution functions in a theater of operations is indicative of the lack of modularity in our current logistics organizational structure.

The function of terminal operations provides a good example of our current lack of modularity. The cargo transfer aspect of terminal operations is doctrinally performed by a cargo transfer company with a movement control team providing traffic management and documentation. The only cargo transfer company in Europe is actually assigned to the 29th Support Group, some of which assets were assigned to TF 29 and used in the Kosovo mission, however, the entire company could not be deployed without adversely affecting the 29th’s ongoing mission in the Kaiserslautern area of Germany. As pointed out in chapter one, having the ability to deploy without affecting the parent units ability to perform at a reduced level is one of the essential characteristics of modularity. Further, the 29th has no movement control capabilities. All movement control teams in the 21st Theater Support Command fall under the 1st Transportation Movement Control Agency (1TMCA) and in the case of the TF 29 operations in

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<sup>43</sup> Global Security, 29th Support Group, Available from <http://www.globalsecurity.org/military/agency/army/29sg.htm>, Internet, Last accessed on 2 March 2005.

Taszar, the movement control teams remained under the control of the 1TMCA and were not task organized under the 29th. This illustrates the fact that under the current structure there is no modular task force or team that can deploy and perform terminal operations, one of the most common and most critical of the distribution functions.

## CHAPTER THREE

### **ANALYSIS OF CURRENT PROPOSALS FOR TRANSFORMED DISTRIBUTION ORGANIZATIONS**

The proposals presented in this chapter are still being developed and will likely change significantly before final approval and fielding. In the case of the Task Force Logistics proposal, all material is still considered “working” or “pre-staffing drafts.” In evaluating the likely effectiveness of these proposals, the intention is not to criticize or complement the work of the authors, but to simply use their current draft as a case study to highlight the application of centralized command, end to end focus, system optimization, and modularity to organizations designed specifically for military distribution.

#### **Sustainment Brigade (Theater Distribution)**

Task Force Logistics, a focus group formed by the U.S. Army’s Combined Arms Services Command (CASCOM) is the Army’s leading proponent for proposing logistics force structure changes for transformation. Their mandate is to “. . . review(s) and redesign(s) how a Land Component Commander is sustained.”<sup>44</sup>

According to the 12 August 2004 Draft *Joint and Expeditionary Logistics for a Campaign Army*, White paper, TF Logistics recommends developing a Theater Sustainment Command at the operational level (UEy). The new TSC combines elements of the current Theater Support Command and the Corps Support Command (COSCOM). The subordinate units of the Theater Sustainment Command are a variety of Sustainment Brigades, each with a specific mission to include a brigade for theater opening, and others for theater distribution, general

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<sup>44</sup> United States Army, Combined Arms Support Command, Task Force Logistics, TF Log slides, Available from [https://www.cascom.army.mil/private/DCD\\_CSS/TFL/DATA/tf%20log%20slides.ppt](https://www.cascom.army.mil/private/DCD_CSS/TFL/DATA/tf%20log%20slides.ppt), Internet, Last Accessed on 2 March 2005.

sustainment, and petroleum. It may also include two aviation brigades, a civil engineer brigade and an Army Materiel Command logistics support element.<sup>45</sup>

The Sustainment Brigade Theater Distribution (TD) merges materiel management with movement management to form a single command that “will have the mission, responsibility and authority to conduct the theater distribution function. It will have functional and multifunctional battalions assigned that will perform the functions of transportation, supply and services.”<sup>46</sup>

The concept is for the theater distribution brigade to perform distribution from the theater hub and throughput to the user when possible. Where throughput is not possible, the theater distribution brigade will deliver the materiel to the newly proposed, UEx level sustainment brigade that will combine functions of the COSCOM and the DISCOM will provide tactical level distribution down to the Brigade Combat Team Level.<sup>47</sup>

In the interest of modularity, all UEy level sustainment brigades, despite their individual function, have a common, rather robust headquarters. This common headquarters is staffed to meet the increased challenges of the current operating environment by adding a civil affairs section, a PAO section, and a brigade surgeon to the more traditional staff sections such as S-1 Personnel, or S-4 Logistics. These special staffs increase the modularity of the brigade and better prepare it to handle the diverse and complex environments of the future battle space.

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<sup>45</sup> Deputy, Chief of Staff, Claude V. Christianson, Lieutenant General, White Paper, *Joint and Expeditionary Logistics for a Campaign Quality Army Draft* (Washington, DC: Government Printing Office, 2004), 12.

<sup>46</sup> *Ibid.*, 13.

<sup>47</sup> Combined Arms Services Command, TF Logistics, White Paper, Draft, *Operational and Organization Concepts Support Unit of Action (SUA)* (Fort Lee, VA: Government Printing Office, 2004).

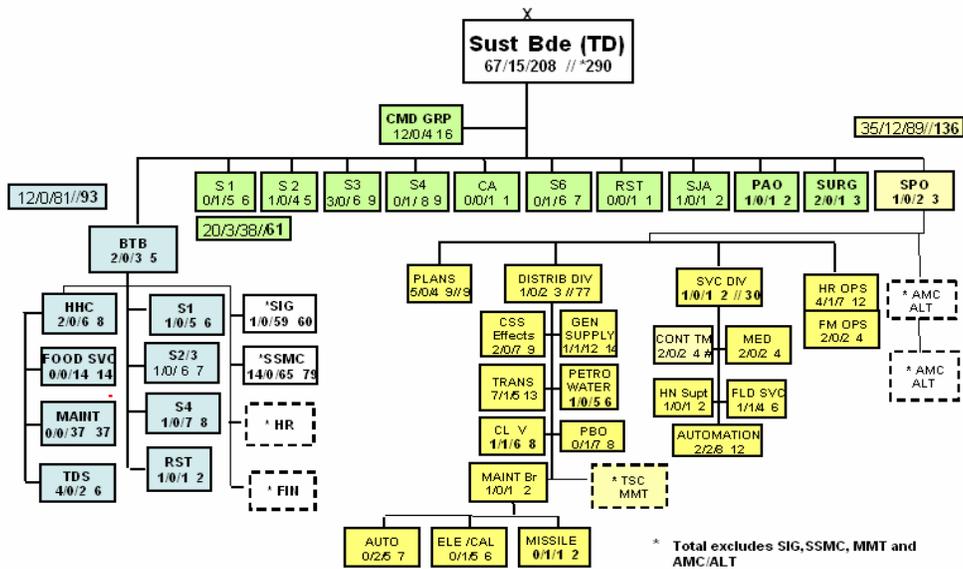


Figure 1. Sustainment Brigade Standard Headquarters

Source: Combined Arms Services Command, TF LOG, *Sustainment Bde (TD) HQ Structure*, TDB URS (Fort Lee, VA: 2004).

As in current logistics support brigades, the support operations section manages the preponderance of sustainment and logistics operations and planning. Under the sustainment brigade, the support operations section is managed by a Lieutenant Colonel and is divided into a plans division, a distribution division, a services division, and human resource operations division. Of the four divisions the distribution division is the largest followed by the services.

The Distribution Operations Division is organized into a general supply section, a petrol/water section, a Property Book Officer, a Class Five Section, a Maintenance Branch, a Combat Service Support Effects Branch and a Transportation Branch. TF Logistics' list of major tasks for the Distribution Operations Division include:

Ensure plans are executed IAW the UEy or Combatant Commander's intent, works to resolve support issues, and synchronizes operations of all TDB elements.

Functions as the synchronization center for the delivery of all Army personnel, equipment, and sustainment items transiting the Theater from the Theater Base to consignees in the UEx.

Maintains oversight over the theater distribution network, CSCs, and regional distribution hub(s). Initiates corrective actions on “spot reports” involving problems on the MSRs. Ensures RFID capabilities exist on theater distribution network.

Ensures personnel, equipment, and sustainment are delivered in the AOR based on Combatant Commander’s intent and TSC’s Theater Distribution Plan.

Integrates representatives/LNOs from external organizations (e.g. AMC, DLA, DIRMOBFOR, and SDDC) into the TDB to ensure support from these external organizations is effectively leveraged.<sup>48</sup>

The Services Division is composed of a Contract team, a medical section, a Host Nation Support Section, an automation section and a field services section. The services division’s primary tasks are to support the sustainment brigade by providing automation, host nation and contract support. The medical branch manages class VIII distribution. While the field services division provides staff supervision over field service support for the sustainment brigade’s area of responsibility.

The standardized sustainment brigade headquarters gain their functionality through the type of subordinate battalions they are assigned. The Sustainment Brigade (Theater Distribution) consists of a transportation battalion with mode operations (rail, watercraft, highway, or air), movement control, and cargo transfer capabilities; and a support battalion that is designed to have all the support requirements necessary to manage a regional distribution hub. Included in this mix are materiel management, water, fuel, ammunition, and internal support capabilities such as maintenance and a force provider to provide lodging and base camp support.

## Centralized Command

The Task Force logistics proposal constitutes a significant improvement in applying centralized command to the distribution process. As discussed in chapter 2, under the current system, the following organizations would likely be involved with the distribution of an item

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<sup>48</sup> Combined Arms Service Command, *Sustainment Bde.*

from a theater port of debarkation to the end user: SDDC, TMCA, TRANSCOM, TDC, Corps Transportation Battalion. Under the Task Force Logistics proposal, SDDC would still be responsible for port management, but the item would then be controlled by the Sustainment Brigade (Theater Opening), which manages distribution from theater entry to the theater hub. The theater hub (roughly equivalent to our current theater distribution centers (TDC) will be managed by the Sustainment Brigade (Theater Distribution) and will be responsible for the onward distribution of the item to the end user. The benefit of this system is that where in the past the different elements of distribution were managed by individual brigades. The TDB effectively provides a centralized command structure for the units that perform distribution in theater. It would typically be organized with three subordinate battalions (groups in certain cases), Transportation, Support, and a Brigade Troops Battalion.

The transportation battalion consists of rail, movement control, and motor transport. In terms of our distribution and distribution management functions, *mode operations*, and *movement control*. The support battalion provides the internal support required to maintain the distribution hubs, centers and infrastructure, while the Brigade Troops Battalion provides administrative control for the brigade headquarters and acts as a headquarters commandant.

The fact that the TDB actually expands in size if required to support more than one UEx is significant as it maintains a single distribution command responsible for distribution in the theater despite the size of the deployment.

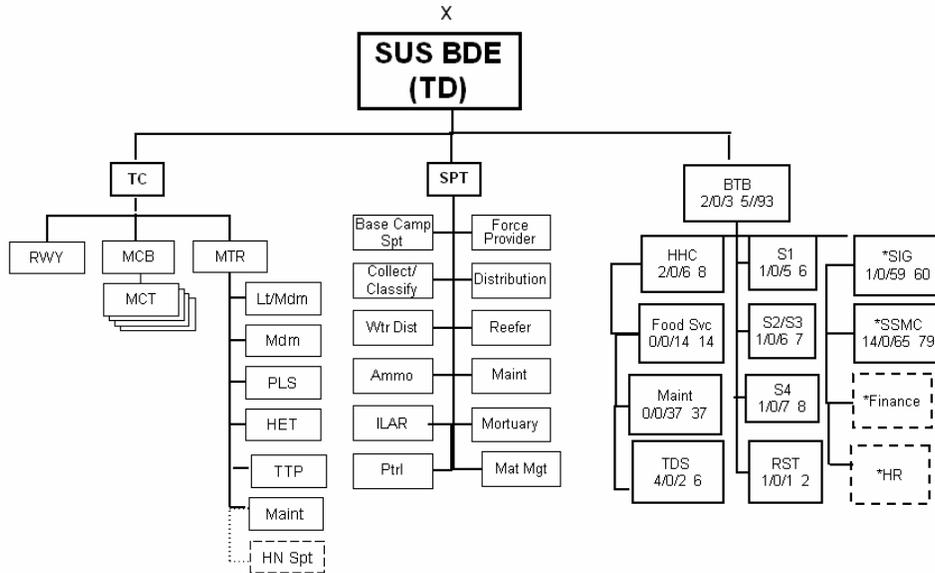


Figure 2. Sustainment Brigade (Theater Distribution) Possible Configuration

Source: Combined Arms Services Command, TF LOG, *Sustainment Bde (TD) HQ Structure, TDB URS* (Fort Lee, VA: 2004).

## End-to-End Focus

Although the TDB and the new TSC expand their focus beyond their current organizational counterparts, the proposal falls short of having true end-to-end focus. Despite the strategic integration cells and the robust distribution management center, the fact remains that the TDB is only directly responsible for providing distribution from the theater hub to the BCT or in some cases the UEx SUA. Although the TSC is responsible for distribution throughout the entire theater, it is also simultaneously responsible for other types of support and sustainment, including, field services, medical, maintenance, etcetera. Further, even the TSC, subordinate to the Army Service Component Command (ASCC), does not have true end-to-end responsibility, thus it is doubtful that they will truly possess an end-to-end focus on the distribution system. Thus despite significant efforts to the contrary, the TF Logistics proposed solution will still leave a distribution system plagued by sub-optimization by echelon.

## Modularity

The efforts TF LOG have made to ensure modularity of their proposals are significant. A standard sustainment brigade headquarters, a distribution brigade with 'plug and play' mode operations capability, new additions to the traditional brigade staff such as a surgeon and civil affairs section, are but a few of the many innovations that cause the UEy sustainment brigade concept to be more in line with the Army's definition of modularity.

In many circumstances, such as the previous example of TF 29's deployment to Hungary, an entire brigade dedicated to distribution is not required. In the past the common solution was ad hoc logistics task forces such as TF 29. Under TF LOG's standard support brigade headquarters design, the right mix of subordinate units capabilities can be specifically tailored for a given mission. Theoretically elements of a Sustainment brigade headquarters could include mode operations, terminal operations, movement control, materiel management and supply modules from the TDB structure along with appropriate modules from the theater opening brigade, the sustainment brigade, or other required capabilities to provide a modular sustainment brigade specifically tailored to perform a given mission.

If there is a larger maneuver force to be supported, i.e., two or more UExs (roughly a division size element) then the modular TDB can be expanded into a brigadier general command with group size modules assigned to perform the specific distribution functions. In addition, these modular capabilities can be specifically tailored to fit the theater in which they are to operate. For example, if the theater possess a modern rail infrastructure, rail operations modules can be assigned as adequate to the TDB. If a rail capability is not required but the lines of communications are uncommonly long, extra line haul assets may be added.

TF LOG's proposal is modular in that it is expandable, tailorable, and interchangeable. In terms of modularity, it is obvious that this proposal is well thought out and should mark a significant improvement over existing structures.

## Distribution and Deployment Command Element

As indicated in the example case of distribution provided in chapter 2, containerization is a common characteristic of an effective distribution system. Container management in many ways is reflective of distribution management. Poor container management is becoming a huge financial burden in Iraq.<sup>49</sup> This has spurred USTRANSCOM and their Army Service Component SDDC to explore different concepts geared towards improving both the effectiveness and the efficiency of container management.

The evolving solution to this problem is proving to be complex and involves a variety of initiatives including, the actual purchase of thousands of containers in order to avoid the costly demurrage charged by commercial carriers, implementing cross-docking operations in theater where the contents of carrier containers are stripped and stuffed into government owned or leased containers, and increased efforts in the realm of RF tagging and the use of automation systems.

SDDC's current organizational structure consists for the most part of two distinct operational units. The first are the traditional terminal operations battalions and groups, which are largely, designed for seaport management and seaport operations using commercial stevedores. The second are deployment support elements (DSE) which are designed to advise and assist units with redeployment policies and procedures, provide documentation support and provided unit movement officer and deployment process training.<sup>50</sup> DSEs are commanded by a lieutenant colonel and are composed primarily of eleven alpha teams consisting of an NCOIC and two soldiers.

With battalion's Table of Distribution and Allowances (TDAs) consisting of less than fifty active duty soldiers, it is obvious that their current structure does not have sufficient manpower to manage the new container management initiatives. This prompted Brigadier

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<sup>49</sup> Charles Fletcher, Brigadier General (P), Briefing to General Handy, USTRANSCOM Commander on 8 November 2004, Scott AFB, IL.

<sup>50</sup> Ibid.

General Fletcher to reorganize his force structure, enlarging it and transforming it into a command better suited to perform its deployment and distribution mission.

The first phase of his reorganization is to stand up a container management organization in theater consisting of more or less a battalion size unit commanded by a Lieutenant Colonel. The organization consists of up to sixteen separate teams of two to three soldiers, normally an officer in charge and up to three enlisted soldiers and or noncommissioned officers. The concept is for a team to be stationed at each distribution node in theater. The mission of this organization is: “Theater Container Manager, Theater Pool Management, Status Reporting, Detention Tracking, and DB (Data Base) Management.” The mission of the Node Teams is to “Read/Write RF tags, Monitor Empty Yard, Expedite Returns, Coord(coordinate) w/Carriers, and Verify reports.”<sup>51</sup>

The second phase of this reorganization is to merge the three types units together to form a Deployment/Distribution Support Battalion with a mission of “Provide Deploying units with pre-deployment assistance/execution of all required deployment/sustainment documentation and Tracking of documented cargo in the theater of operations.”<sup>52</sup> This battalion is designed with a early deployment module and a follow-on deployment module. The early deployment module consists of the battalion headquarters and four Deployment/Distribution support teams, the follow-on deployers are the remaining three Deployment/Distribution support teams. Each team has a captain, mobility warrant, and sergeant first class in their headquarters section and are further organized into two platoons, a materiel platoon and a movements platoon. The materiel platoon consists of a lieutenant, a staff sergeant, three sergeants and eight enlisted soldiers.<sup>53</sup> These teams would effectively dissolve the seam between our current strategic and theater

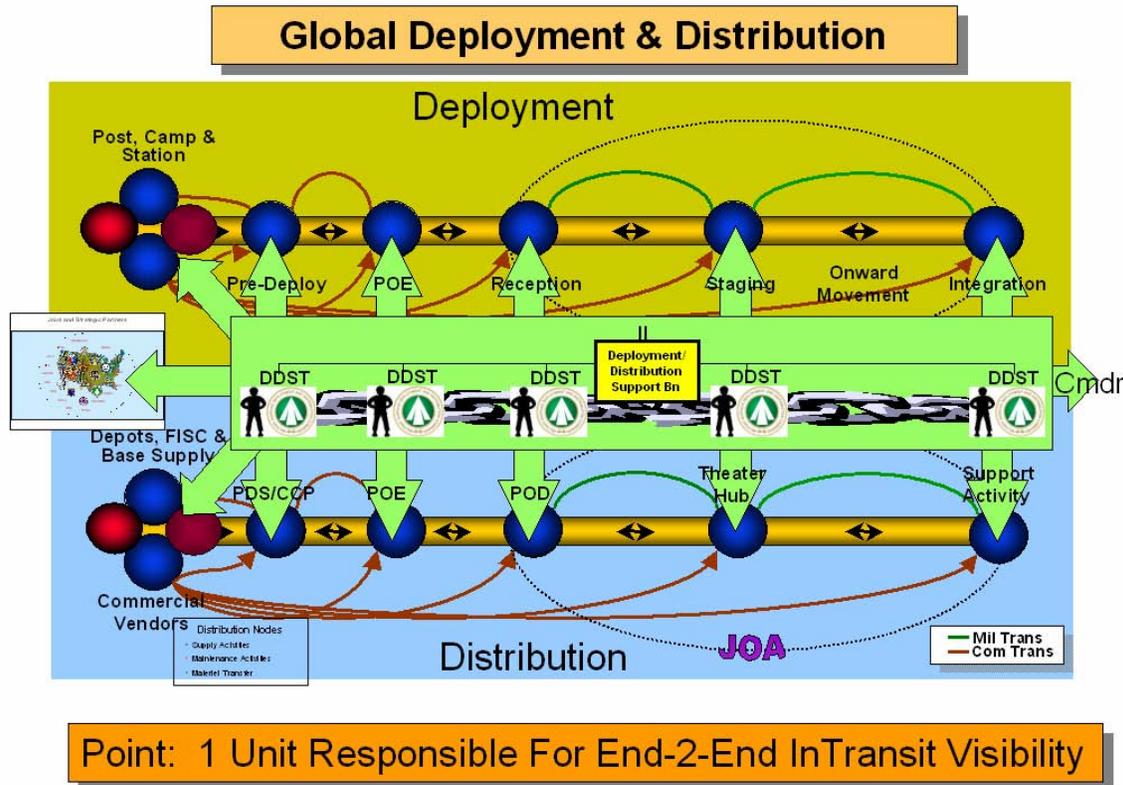
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<sup>51</sup> Ibid.

<sup>52</sup> Ibid.

<sup>53</sup> Ibid.

distribution systems as they would manage the materiel passing through their nodes from the strategic level ensuring their onward movement with a theater movement control function.



**Point: 1 Unit Responsible For End-2-End InTransit Visibility**

Figure 3. SDDC End-to-End Concept

Source: Charles Fletcher, Brigadier General (P), Briefing to General Handy, USTRANSCOM Commander on 8 November 2004, Scott AFB, IL.

Brigadier General Fletcher's concept essentially takes the merger of materiel management and movement control, initially seen with the advent of the DMC, and evolves it from a staff section with an oversight and planning mission to an actual command with a distribution control and management mission. In addition, by locating teams at each node, he is penetrating deep into the traditional theater and corps areas. This is very significant, not only in

the fact that it is a revolutionary approach, but also because it greatly increases the overall modular deployment capability of the Department of Defense. If a strategic command can manage distribution nodes regardless of their level or location on the battlefield, then the command structure required to provide sustainment to a maneuver unit of action is potentially greatly reduced. Under his model, theoretically, and in an environment with ample commercial mode operations, all the distribution requirements of a deployed maneuver brigade could be accomplished with a single Deployment/Distribution Support Battalion.

The weakness in Brigadier General Fletcher's proposal is the traditional MTMC (SDDC) dependency on commercial support. SDDC does not own or operate a single truck, train, plane, or ship; they rely on commercial assets or on Military Sealift Command for non-liner ocean transport, and Air Mobility Command for airlift. In a theater of operations, military truck transport is owned by the theater or corps level commanders. When asked if he considered adding trucks to this command, Brigadier General Fletcher "if it makes sense, but I don't see that it necessarily makes sense. I think that mode operations, for a combatant commander need to be owned by a combatant commander. I think that's one of the things I suffered with (as 3rd COSCOM Commander during OIF) is having a theater run trucks that is given multiple tasks, they tend to equalize across the tasks. If you're in combat, you don't want somebody equalizing across the tasks, you want them supporting your main effort."<sup>54</sup>

Unfortunately, due to a variety of factors, military owned trucks are not as responsive to movement controllers as their commercial counterparts. Conflicting missions and priorities can often become an issue when one command has tasking authority over another. As Brigadier General Fletcher points out, commands tend to equalize or optimize across all their assigned tasks.

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<sup>54</sup> Fletcher, Interview.

On the other hand well-written commercial contracts have proven to be both responsive and reliable. In a commercial environment, SDDC already manages all aspects of end-to-end distribution; however in a given theater of operations that the owners of the transportation assets may significantly influence process, be they from the theater support command or the COSCOM.

## Centralized Command

The SDDC proposal in its current state provides centralized management to the distribution system. As at this point the DSEs will not actually command or provide direct control over the anything other than the elements of distribution management.

The benefit of the SDDC with regards to command, however, is that DSEs will only focus on distribution, and they are likely to focus on distribution in its entirety, thus sub-optimization along functional lines is unlikely.

## End-to-End Focus

Unparalleled end-to-end focus is by far the most attractive feature of the SDDC proposal. With its origins as a strategic transportation organization, SDDC has always been involved with distribution from the source to the theater. In certain circumstances, specifically when SDDC arranges transportation under their Universal Service Contract, SDDC has provided the transportation element of distribution on an end-to-end basis. Thus the expansion of SDDC from a strategic transportation manager to a multi-echelon distribution manager is somewhat natural.

## Modularity

Under the current proposal the DSEs appear to be modular if for no other reason than their relatively small size. As in their ability to provide end-to-end focus, SDDC has much precedence in terms of modularity. As the DOD's single port manager, SDDC routinely deploys tailorable, expandable, and interchangeable, terminal modules. These units provide documentation support, vessel stow planning, general port management, and supervision of

terminal operations whether performed by a commercial stevedores or by Army Stevedores from 7th Transportation Group.

## RECOMMENDATIONS AND CONCLUSIONS

Viewing supply and transportation not as separate functions on the battlefield but as two elements of a common distribution system is in itself a very significant step in the right direction. Unfortunately, with the challenges of transforming an Army at war, steps in the right direction are insufficient--leaps are required. Distribution-based logistics, if fully embraced will constitute a 'leap' and will enable us to ensure that the soldier has what he needs, when and where he needs it. Unfortunately, DoD cannot fully adopt DBL simply by purchasing new technologies, writing new doctrine, and improving business practices. Dramatic reorganization of the logistics forces responsible for distribution is critical if we are to ensure that the future warfighter has what he needs when and where he needs it.

### Recommendations

**Organize Modular Distribution Units that have centralized command, end-to-end focus.**

As pointed out repeatedly throughout this study, modularity, centralized command, and end-to-end focus are essential characteristic of any future distribution organization. The authors of *Marketing Logistics and Distribution Planning*, a widely recognized standard in business logistics, emphatically write that "function-oriented management is incapable of integrating the tasks of physical distribution into a unified operating entity so that the process can be managed and developed in response to the environmental demands placed on it."<sup>55</sup> If DoD is going to truly achieve DBL it must eliminate this 'function-oriented management' that invariably leads to sub-optimization. In addition, a multi-echelon command structure with an end-to-end systematic focus must replace the current, myopic, echelonment of distribution functions at the strategic,

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<sup>55</sup> Christopher and Wills, 341.

theater and tactical level. Finally, in order to be effective in the current operational environment, any new organizational structure must be modular--expandable, tailorable, and interchangeable.

Each of the two proposals explained in chapter three approaches the above listed goals but each fall short of full compliance. The TDB is not likely to have sufficient end-to-end focus as it is resident under a TSC at the UEy level. SDDCs proposal, at least at present, only focuses on the management aspect of the distribution system, leaving the physical functions of performing distribution to other theater level logistics commands. The solution is to merge the best characteristics of each proposal as well as other distribution activities currently at the strategic level in order to form a unified combatant command completely dedicated to distribution.

### Create a Unified Distribution Combatant Command

Although this study focused on units at the theater level, as demonstrated by the example of the Pure Pallet Initiative in chapter 1, sub-optimization of the distribution system occurs at the strategic level as well. Thus the characteristics of an effective distribution organization presented in chapter 1 apply to the distribution system as a whole. End-to-end for DoD normally means from DLA to the soldier who ultimately uses the item. Thus for distribution to be optimized on an end-to-end basis, a single command with end-to-end supervision must be responsible for its function.

Although creating a distribution command with a multi-echelon focus would be unprecedented in military logistics, this type of command has long been the norm in combat arms. A regional combatant commander has authority over all combat forces from the strategic to the tactical level in his theater. This structure discourages sub-optimization by echelon or function and facilitates nesting and unity of effort. This type of command is precisely what is required for effective distribution.

## Distribution as a Functional Area

“Multifunctional logistics” has long been lauded as the way of the future. Branch specificity in the logistics community took on a negative connotation. Not surprisingly, this argument has merit, especially at the Brigade or Division level where, due to the scale of the operations, almost all logisticians above the rank of Lieutenant have a multifunctional role.

At the Corps and theater level however, a certain amount of subject matter expertise is important. There is a common perception that command at the battalion level or higher only requires proficiency in general leadership and management skills--the assumption being that technical expertise resides at a lower level. Unfortunately this argument does not withstand reality. Leading soldiers is universal. Good leaders possess similar traits regardless of the type of unit they are in; however effective management requires a different skill set altogether and in most cases a certain amount of technical expertise. On the other hand, many theater level logistics units become so focused on their particular function that they contribute to the stovepipe mentality, and sub-optimization discussed throughout this monograph.

The success of multi-functionality at the FSB/MSB level is due in part to the fact that the scope of functions and responsibility are narrow enough to allow expertise among leadership. At the COSCOM and TSC level the functions are so specific and diverse that technical subject expertise is normally limited to a particular function with a basic working knowledge of the rest. A battalion commander in a DISCOM not only possesses the requisite leadership skills but also an expertise in all aspects of his battalion’s mission, providing comprehensive logistical support to a Brigade Combat Team. A Corps Support Battalion commander certainly possesses the leadership skills, but because of the broad and often technical focus of the companies in his charge, will not likely be an expert in all aspects of his battalion mission.

The reorganization of appropriate echelon above brigade logistics into units whose sole purpose is distribution will provide a functional focus, broad enough to prevent stove-piping, but

like the traditional DISCOM multifunctional logisticians, narrow enough to allow expertise. Upon reorganization the Army should capitalize on this focus and create another functional area for logistics officers. Functional Area 90 would focus on those providing multifunctional logistics to maneuver brigades while the new functional area would train and hone those skills required for theater distribution and deployment. This new functional area for officers would provide the leadership necessary to command and manage the distribution-based logistics system of the future.

## **Conclusion**

As early as 1968, Charles Taft indicated the natural tendency for commercial traffic management departments to assume the warehousing, material handling and packaging functions and evolve into physical distribution departments.<sup>56</sup> Almost forty years later, this evolution is long over due for the United States Department of Defense.

The proposed transformation of logistics units in order to better perform distribution remains marred in a cultural and political quagmire. On the morning of 17 December, 2004, a senior Army logistician indicated that the TF LOG proposal for a Sustainment Brigade (Theater Distribution) as described in the last chapter, would likely be disapproved in favor of a more generic, multifunctional sustainment unit of action (SUA).<sup>57</sup> These multifunctional SUAs look very much like the multifunctional logistics brigades already located at the theater and corps level and though indications are that they will be more modular, they are unlikely to provide the centralized command and end-to-end focus necessary for an effective distribution system.

Further, Brigadier General Fletcher's bold changes are being implemented uncomfortably within the bounds of our well entrenched political and command boundaries and not without a

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<sup>56</sup> Charles A. Taft, *Management of Traffic and Physical Distribution*, 3rd ed. (Homewood, IL: R.D. Irwin, 1964), 36.

<sup>57</sup> Cofield Hilburn, Meeting with Major General Brian I. Geehan, Chief of Transportation, on 17 December 2004, Notes held by Hilburn.

certain degree of resistance. As a result he is establishing his end-to-end distribution management structure alongside and to a certain extent over top of the existing logistics structures in theater. The Army and the DoD as a whole must overcome this cultural bias if the current transformation efforts are to achieve their potential benefit to military distribution.

Lieutenant General Christianson urgently calls for “a single focus on the simple task of guaranteeing delivery--on time, every time. We must have a distribution system that reaches from the Soldier at the tip of the spear to the source of support, wherever that may be.”<sup>58</sup> This type of distribution system can only be accomplished if it is managed by distribution organization aptly designed for the purpose--a single, unified, and centralized command with end-to-end reach and focus and a modular design.

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<sup>58</sup> Deputy, Chief of Staff of the Army, Claude V. Christianson, Lieutenant General, Army Logistics White Paper, *Delivering Materiel Readiness to the Army*, December 2003, 1. Available from <http://www.army.mil/features/LogWhitePaper2004/LogWhitePaper.pdf>, Internet, Last accessed on 2 March 2005.

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