Chapter 3

Creating Effective Logistics

"When Marines go ashore, they start from zero. Pioneering logistics troops . . . build sustainability ashore to support operations across the entire spectrum of combat with the en- tire range of logistics. Combat logistics is second nature to Marine logisticians. . . . All this translates to an innate responsiveness and relative ease of movement."[1]

—C. E. Mundy, Jr.

"The way to meet . . . logistical demands is to flow your resources to the focus of effort—the highest priority need at the time. This requires flexibility, in the form of intelligent, well-trained Marines . . . ."[2]

—J. A. Brabham

Acknowledging the basic nature and theory of logistics outlined in the first and second chapters, we can now discuss how to make logistics work for us. What are the characteristics of effective logistics, and how can we best incorporate them into our force?

THE CHALLENGE TO LOGISTICS

Let us review some of the challenges facing logistics. What obstacles must our logistics system overcome, and what must it accomplish? First, *logistics must enhance, not inhibit, our operational designs*. While we know that logistics establishes the limits of what is operationally possible, we must build a logistics system that *extends those limits* as far as possible. Second, *our logistics system must anticipate requirements*, positioning support in advance of stated needs in order to facilitate tempo and enabling us to fight the present battle, the next battle, and the battle after next. Next, since we recognize that friction and uncertainty will make it impossible to anticipate all requirements, *our logistics system must be flexible, adaptable, and responsive*. It must be able to respond to unanticipated demand and rapidly shift support to exploit oppor- tunities as they arise in the battlespace. Finally, *our logistics must be effective yet efficient*. It is important that our logistics system does not have overstocks and inefficiencies that drain our combat power. At the same time, we must ensure we do not sacrifice combat effectiveness for the sake of efficiency. We must accept some

measure of inefficiency in order to provide the margin of safety required to deal with unforeseen circumstances. Said another way, we must guard against logistics becoming an end unto itself, and ensure that logistics is always focused on the support of operations.

MANEUVER WARFARE

Our logistics capabilities must first and foremost support our warfighting philosophy. Marines are guided by the philosophy of maneuver warfare, an approach to warfighting that emphasizes rapid, focused effort, tactical and operational flexibility, and decentralized adaptation.[3] Because this approach is primarily concerned with the enemy, and particularly the destruction of the enemy's cohesion, it is easy to think that maneuver warfare has little to do with logistics. This is not true. The practice of maneuver warfare has fundamental implications on the way a force is organized, moved, managed, and supplied. All Marines must understand how logistics influences the conduct of maneuver warfare. While logistics units normally do not directly attack the enemy, their actions have a significant impact on the ability to gain an advantage over the enemy, generate tempo, and exploit opportunities. If Marine forces are to execute maneuver warfare, logistics units and logisticians who move and maintain those forces must not only be able to support maneuver warfare but must also apply its precepts to their own actions.

Centers of Gravity and Critical Vulnerabilities

Maneuver warfare focuses on the enemy. The aim is to present the enemy with a series of dilemmas in which events happen unexpectedly and more quickly than the enemy can react to. Marines attempt to identify the adversary's *centers of gravity*, those elements from which the enemy draws strength, and to locate *critical vulnerabilities* which, if exploited, can help us destroy, neutralize, or undermine the centers of gravity. Our logistics capabilities must allow us to seek out and exploit these critical vulnerabilities. Logistics must provide us the flexibility to avoid attacking an enemy's strength and the agility to exploit opportunities and to strike at known weaknesses. It must expand, not restrict, our operational possibilities. At the same time, we must ensure that our logistics capability does not become a critical vulnerability that our foe can exploit. We must protect our logistics bases and units while building redundancy into our logistics system, preventing the enemy from disrupting our efforts simply by striking at our logistics.

Focus of Effort and the Main Effort

Identification of the enemy's centers of gravity and critical vulnerabilities helps us to concentrate our efforts on objectives most likely to achieve success. The enemy elements on which we will concentrate are the *focus of effort*. The unit or task organization which will perform the key actions against this target is the *main effort*. Identifying the focus of effort and designating a main effort to concentrate on the focus of effort are the commander's bid to achieve a decision. The commander

ensures that all forces support the main effort either directly or indirectly.

Like our combat and combat support capabilities, our logistics capabilities must be focused. As a rule, the main effort is first in line for most resources. It is at the main effort that a given resource is most likely to have the greatest impact on the outcome of the battle or campaign. This does not mean, however, that the main effort should be burdened with resources that it does not need. Providing too much or the wrong kind of resources can hinder the main effort as much as a lack of support. Neither does it imply that we should consider only the needs of the main effort. We cannot support the main effort at the exclusion of all others. All essential activities require some degree of support, even if that support is limited to basic life support such as food, water, and medical assistance. Likewise, the inclination in favor of the main effort excludes resources or activities that cannot have a timely effect on the battle or campaign. Nonetheless, in the absence of a compelling reason to the contrary, the main effort should have the highest priority for scarce supplies and services.

All units contribute to the provision of logistic support to the main effort, not just logistics organizations. Units not at the main effort can enhance its logistic support by reducing to the lowest possible level their use of resources that are useful to the main effort. These resources include supplies, the services

of logistics units, and the attention of those responsible for the overall logistic effort.

We also recognize that opportunities in the battlespace are fleeting and that the enemy will try to protect critical vulnerabilities. As the situation changes, the commander may designate a new main effort or even change the focus of effort. *Our logistics system must provide the flexibility and agility that enable us to exploit opportunities as they present themselves.* It must be able to anticipate developments and position resources to support future requirements, in effect staying one phase ahead of the current battle. At the same time, the logistics system must adapt to unforeseen circumstances and be able to shift the logistic focus in concert with any shift in the main effort.

Tempo

Maneuver warfare depends heavily upon the use of tempo, both as a means of exploiting opportunities and as a weapon in its own right. Tempo is the consistent ability to act fast, to sustain rapidity of action over time. We seek to operate at a higher relative tempo than the enemy. Superior tempo allows us to seize the initiative and dictate the terms of combat, forcing the enemy to react to us. *Logistics makes a critical contribution to the generation and maintenance of tempo*. An effective logistics system enables us to quickly focus combat power and sustains that combat power throughout the course of operations. Logistics can maintain tempo by rapidly delivering supplies,

repositioning forces, and repairing or replacing damaged equipment. Finally, a responsive logistics capability enhances tempo by anticipating requirements and adapting to new requirements, expanding rather than limiting the commander's operational possibilities.

Maintaining tempo requires that logisticians be extraordinarily alert. Logisticians at all levels must be aware of the full scope of the operation so that, at any given time and place, they understand what needs to be done to keep it moving forward. They must exercise considerable initiative, doing what needs to be done as soon as it needs to be done. Supporting tempo requires logistics units to operate at a high tempo. In high-tempo operations, displacements are often rapid and frequent, facilities are usually austere, and priorities may shift frequently. Greater demands will be placed on junior leaders and individual Marines, who will have to possess a wide range of technical, military, and leadership skills. While the techniques used to provide services at times resemble the classic assembly line, there will be no room for the assembly line mentality. Overspecialization, in which a person is trained to do a small number of highly repetitive tasks and then insulated from other duties, is rarely compatible with a high tempo of operations.

In seeking to support a high tempo of operations, we must be careful not to mistake haste for energy, confuse sloppiness with boldness, or substitute activity for action. Maintaining a high tempo of operations requires deliberate action tailored to

the needs of the moment, not self-generated friction. A logistics unit operating at a high tempo may not seem busier than a similar organization operating at a slower tempo. However, each action performed by members of the unit operating at high tempo is more likely to be a purposeful one and less likely to be a matter of habit or routine. That is to say, every member of a logistics unit operating at a high tempo must constantly ask, "What is the best way for me to use my limited time and resources to help my supported unit fulfill its mission?"

Commander's Intent

If logisticians are to support a high tempo of operations, they cannot waste time waiting to be told what is required of them. Rather, they must make a concerted effort to understand what the commander is trying to do and the commander's plans for doing it. The commander's intent describes the purpose of the assigned task. A clear understanding of the intent becomes the basis for unity of effort and the exercise of initiative. Like all other participants in an operation, logisticians must internalize the commander's intent to the point where it becomes the common property of the entire force. This shared understanding allows logisticians to make informed judgments about such things as the allocation of resources, the best techniques for moving units and supplies, and the best approach to providing various services.

The value of the commander's intent can be seen in all sorts of operations but is most obvious in situations where formal communications break down. One of the immediate effects of

the German offensive that began in March 1918 was the psychological paralysis of the command structure of the British Expeditionary Force. While this breakdown precluded the issuance of coherent orders for a number of days, it did not hinder logistics units from effectively participating in the defense. Thanks to a shared understanding of the defensive battle developed during a series of discussions held the previous winter, British logisticians were able to make the best use of remaining resources to support the deployment of provisional combat units and operational reserves. These forces eventually brought the attack to a standstill.[4]

MARINE LOGISTICS

Logistics is a Service responsibility.[5] Therefore, it is essential to support the Marine Corps' warfighting philosophy with Marine-style logistics. The Marine logistics system is designed to meet the particular demands of naval expeditionary operations and the peculiar needs of high-tempo, fluid, and decisive operations required by our warfighting philosophy. Marine logistics provides the unique capabilities which make Marine forces rapidly deployable, self-reliant, and self- sustaining.

Expeditionary operations project combat power over great distances. Forces must be able to deploy far from their home bases and fight effectively when they arrive. An expeditionary force's value lies in its ability to reach a distant area of

operations in a timely manner, project power at the required time and place, and sustain the effort until the mission is accomplished. The conduct of expeditionary operations from the sea places additional demands on the expeditionary force. The force must be largely independent of land bases and capable of responding to a wide variety of missions on short notice. Naval expeditionary operations require an approach to logistics that emphasizes self-sufficiency and capabilities tailored to function in the littoral environment. This has specific implications for the force as a whole and the logistics system in particular.

Marine forces must be designed for expeditionary operations. We must build our forces with *deployment* and *sustainment* in mind. Our organization and equipment has to be efficient as well as effective. While our forces must have the required capabilities, we must always remain conscious of our limited transportation assets. Aircraft seats, boat spaces, and cargo capacity are valuable commodities which must be used wisely. Units, weapons, and equipment that can perform multiple functions and provide significant capabilities in a variety of missions are more useful than assets which are specialized for the conduct of a single function or mission. We must consider sustainment requirements in addition to operational capabilities in designing our force; capabilities which cannot be maintained or supplied are useless in an expeditionary environment. Doctrine, procedures, and training and education must emphasize discipline in the use of resources and the ability to adapt basic capabilities to meet the requirements of many different scenarios.

Marine logistics must be able to build logistics capabilities where no capabilities exist. Our logistics must provide the *self-sufficiency* required to execute naval expeditionary operations. It must be able to create or deliver all of the supplies and services required to sustain the force. It must be able to *function in austere environments* without reliance on permanent bases or a developed infrastructure. Our logistics system must be *naval in character*, capable of operating with equal agility on land, at sea, or in the littoral region where the two environments meet. It must be able to exploit the advantages inherent in naval operations through the seabasing of logistics and maritime prepositioning. At the same time, it must be able to freely and rapidly transfer resources from ship to shore, ensuring continuous support of forces ashore. While our logistics capability must be largely self-sufficient, we must possess the infrastructure and interoperability to draw from national, theater, or host-nation logistics resources when we conduct extended operations ashore.

Like the forces it supports, our logistics capability must be *flexible* and *economical*. It must have the flexibility to support the variety of missions our forces will be called upon to execute. It must provide this flexibility without pausing to reconfigure or deploy additional assets. The logistics system must

not take up more space or consume more resources than are absolutely necessary. We cannot afford to sacrifice combat power in order to carry excess capacity.

An additional characteristic of naval expeditionary forces is the ability to "*recock*." Our forces can complete one mission, reembark, and move on to the next task without hesitation. Our logistics system must contribute to this capability. Our logistics system must have the *agility* and *redundancy* to do more than one thing at a time. It must be able to shift its focus and adapt to rapid changes in the course of a campaign or major operation. We must consider redeployment as well as deployment in designing our capabilities and ensure that we can depart with the same urgency as we arrived. Generating combat power is not sufficient; we must also place an emphasis on regenerating that combat power once it has been expended.

Core Capabilities

Logistics must be tailored to the conditions under which a military force operates. To provide the forces necessary for expeditionary warfare, the Marine Corps must possess certain *core logistics capabilities*. These core capabilities cut across the three levels of logistics and encompass all six logistics functions.

In order to generate, deploy, and sustain expeditionary forces, the Marine Corps must have strategic-level core logistics capabilities which enable us to procure weapons and equipment, mobilize forces, prepare and stage units for

deployment, regenerate forces, and effectively manage the flow of resources from the strategic to the tactical level. *Strategic-level core logistics capabilities are embodied in an acquisition system, bases and stations, facilities required for the maintenance of unique Marine equipment and the provision of Service-specific supply items, and effective Service-level command and control of logistics.*

If the Marine Corps is to fulfill its role as a fighting force for regional contingencies, it must possess operational-level core logistics capabilities to support force closure, sustainment, and reconstitution and redeployment of Marine forces in theater. *Operational-level core logistics capabilities include the establishment of intermediate and forward support bases, the ability to support the arrival and assembly areas for troops reaching the theater, the ability to coordinate with joint, other Service, and host nation agencies for provision of continued support, the capability to reconstitute and redeploy forces for follow-on missions, and operational-level command and control for the effective planning and management of operational-level logistic efforts.*

If the Marine Corps is to practice maneuver warfare within the littoral regions of the world, it must have tactical-level core logistics capabilities which can deliver flexible and responsive combat service support to meet the needs of the forces engaged in operations. *Tactical-level core logistics capabilities required are supply and maintenance systems to provide*

matériel readiness, transportation systems to effect distribution, services, general engineering, health services, and tactical-level command and control which links operation plans and the resulting logistic requirements to logistic capabilities and responses.

Planning

Successful logistics begins with planning. The objective of Marine logistic planning is to match the deployment and sustainment activities of our logistics system to the logistic requirements of the operating forces. Planning provides the means to evaluate the feasibility of various tactical options and to determine the adequacy of resources to support them. It assists us in anticipating requirements and positioning resources to meet those requirements. It establishes the framework for the execution and coordination of logistic support in accordance with the commander's intent and the concept of operations. Planning also provides the basis for adapting to new situations; through their participation in the planning process, logisticians gain situational awareness, facilitating their ability to deliver flexible and responsive support when confronted with changing circumstances.

Logistic planning encompasses all three levels of planning: conceptual, functional, and detailed.[6] (See figure 8.) Conceptual planning establishes overall objectives and develops broad concepts for action. *Logisticians must participate in the commander's conceptual planning* to ensure that operational concepts under consideration can be supported by the resources

available and that logistic factors have been taken into account in the development of the operational design. Participation in conceptual planning also provides the logistics planner with the understanding needed to develop functional and detailed logistic plans that can support the operation plans.

Functional planning involves the development of general plans for the conduct of specific warfighting functions such as aviation, fire support, intelligence, or logistics. Logistic functional plans establish the overall logistic support concept and lay out the framework for the development of detailed plans for specific logistics functions. Because of our expeditionary nature, Marine *logistic functional planning at the strategic and operational levels usually encompasses two related planning areas: force deployment planning and sustainment planning*. Both are critical to the development and maintenance of combat power within the area of operations. *Force deployment and sustainment plans must be developed concurrently to ensure that the required combat elements can be deployed and sustained to accomplish the mission.* At the tactical level, logistic functional planning develops the concept of combat service support.

Detailed planning uses the broad designs of conceptual planning and the framework of functional planning to make comprehensive plans for execution. Detailed planning works out the scheduling, coordination, or technical issues involved with directing, moving, and sustaining forces. Much of logistic planning is, in fact, detailed planning. Detailed plans are developed

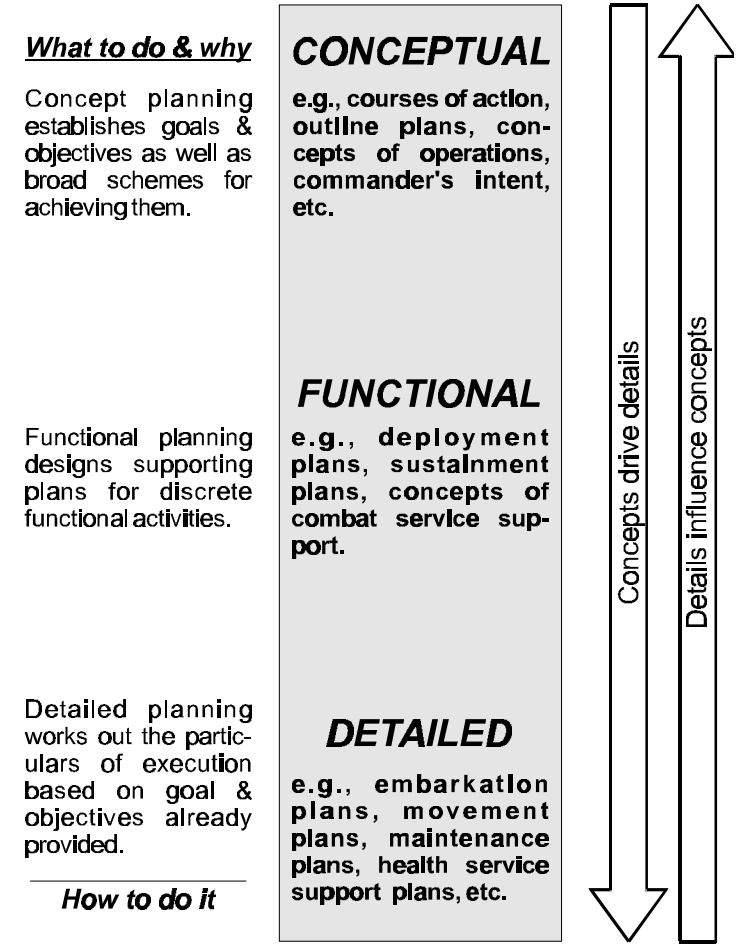

Figure 8. Levels of planning.

for embarkation, transportation, supply and resupply, provision of maintenance and health services, and other logistics functions. It is important to remember that *effective detailed planning depends on the establishment of sound functional logistic plans and integration with the conceptual plan for the operation.*

Planners must be sensitive to the time available. Logisticians must be able to plan in both deliberate and rapid planning situations. In deliberate planning, we use time to develop our knowledge of the area of operations, analyze potential requirements, calculate resources required, detail a number of options for the provision of logistic support, and test and refine the resulting logistic plans. In addition to developing the plans themselves, during deliberate planning, we practice and improve our planning techniques. In rapid planning, we meet the requirements of a crisis by adapting an existing plan to the current conditions or by rapidly developing a new plan which provides the basis for supporting the operational concept.

We strive for three primary characteristics in the development of logistic plans: integration with operation plans, flexibility, and simplicity. If our logistic plans are to expand the limits of our operations, they must, first and foremost, be integrated with operation plans. It is incumbent on the commander to ensure that the concept of operations is logisticly supportable in every phase of execution. Integration is achieved in part by designating a main effort and providing a clear statement of intent around which all aspects of the operation are planned. It

is also achieved by ensuring that the planning process is participatory, involving the commander and all members of the staff. Participatory planning means cooperation both horizontally and vertically within the organization; logistics planners must be intimately familiar with the details of intelligence, operations, fire support, and aviation plans just as representatives of those functions must participate in the development of logistic plans. Finally, inte- gration is aided by the development of mutual understanding and implicit communications among the commander, the logistician, and the rest of the staff during training evolutions.

Logistic plans must be flexible in order to deal with the uncertainties of war and adapt to changing conditions in the battlespace. Flexible logistic plans support the execution of a variety of different operational courses of action. These plans may even have specific branches and sequels to the basic logistic plan so that we can anticipate requirements related to the course of future operations. We build flexibility into our logistic plans by providing a number of ways to provide support so that minor oversights, shortfalls, or unforeseen circumstances will not undermine our efforts.

Finally, our logistic plans must be as simple as the situation allows. Providing logistic support to Marine forces operating in an expeditionary environment is an inherently complex task. Logisticians must develop plans that rapidly deploy large forces over vast distances and that sustain those forces by providing huge quantities of resources and a wide variety of

services while engaging in high-tempo operations on land, in the air, and at sea. Logistics planners employ complex tools such as usage data, consumption rates, personnel and equipment densities, asset tracking systems, and other data bases and information systems in an effort to calculate requirements and match resources to those requirements. *While the problem facing the logistician is complex and the methods used to develop a solution may be sophisticated, this does not necessarily mean that the resulting plan must also be complicated.* A good logistic plan recognizes that in warfare the simple becomes difficult and the difficult seemingly impossible. We build our logistic plans around simple, compelling concepts. We ensure that the underlying intent behind the concept is understood, reducing the requirement for detailed and explicit instructions covering every eventuality. We attempt to limit the number of actions required in the plan to the minimum. We rely on methods and standing operating procedures developed and perfected during training to reduce the complexity of specific logistics processes.

Command and Control

Planning makes up an essential and significant part of command and control. Planning provides the means to anticipate future requirements and, through preparation, to adapt to them prior to execution. We must also be able to adapt to situations as they unfold. Command and control of logistics capabilities provides the means for implementing our logistic plans and for modifying those plans based upon unfolding events. Effective command and control of logistics helps to anticipate demand, enables the tailoring of resources to specific needs, and provides responsiveness to the requirements of the operating forces. A commander's ability to control the logistics system and adapt to changing circumstances can have a significant effect on the flexibility and momentum of operations.[7]

Logistics must make the most effective use of limited assets in order to generate and sustain combat power. *Command and control of logistics helps ensure the effective employment of resources in the face of competing demands raised by forces engaged in operations.* Logistics command and control enables us to monitor unfolding events, make sound and timely decisions on resource allocation, and implement those decisions quickly, facilitating the generation and maintenance of tempo.

Because of inherent tension between the limited availability of resources and the widespread need for those resources, logistics generally requires greater centralization of control than other military functions. Centralized control helps make most efficient use of resources in environments where operating forces are competing for limited assets. In addition, centralized control provides the commander with the flexibility to allocate critical resources based on changing conditions or in response to new opportunities. At the same time, we recognize that centralization can inhibit responsiveness, initiative, and the ability of individual units to exploit opportunities. Thus, we seek to achieve a balance in the degree of control used by our logistics system. In general, we employ greater centralized control at the strategic and operational levels of logistics and attempt to decentralize the performance of tactical logistics functions to the maximum extent possible.

BUILDING CAPABILITIES

An effective logistics capability is made up of many components. Organization, personnel, doctrine, education and training, procedures, and equipment all contribute to the development of a responsive logistics system. *The most important element in any logistics system is the people who make it work. Marines are the key to the execution of effective Marine logistics.* More than anything else, it is the people, those who are supported by the logistics system and those who provide

the support, who determine whether it will succeed or fail, whether it supports the decisive maneuver of friendly forces or aids the enemy by contributing to friction. For this reason, we will discuss the human factors critical in building an effective logistics capability—leadership, discipline, attention to detail, and responsiveness—before turning our attention to the other key aspects of our logistics system.

Leadership

Like all endeavors in war, effective logistics depends upon leadership. *Logistics is a command responsibility, not the exclusive province of technicians or specialists.* Commanders must lead the logistic effort, just as they lead all other aspects of their command. They do this in several ways. They provide a clear statement of intent and the specific guidance required to focus the logistic effort. They ensure that logistics considerations are integrated throughout the planning process, that operation plans are supportable, and that the logistic plans which will generate and sustain the unit's combat power are developed in conjunction with those operation plans. They supervise the logistic effort, amplifying and clarifying guidance when necessary and lending the commander's influence where required to ensure the unit receives the necessary support from outside agencies. Finally, the commander supports the efforts of logisticians, ensuring that they are an integral part of the team and encouraging their exercise of boldness and initiative while carrying out the commander's intent.

During operations, logistics sections and units must perform complex tasks under difficult and dangerous conditions. Aggressive and enthusiastic leadership from officers and noncommissioned officers is required to ensure effective performance. Just as in combat or combat support units, leadership in logistics units strives to build teamwork, mutual trust, and a willingness to exercise initiative. Said another way, *effective leadership is the key to effective logistics.*

Discipline

Discipline is another critical factor in providing effective logistics. Discipline is required because demand will almost always exceed available resources. Requests for unneeded resources clog the system and block the distribution of needed material. Demands for excess support—that little extra "just in case"—can place an extraordinary burden on the logistics system; when repeated across an entire force, these demands create what has been called the "snowball effect," an ever-increasing requirement for unnecessary resources which reduces both effectiveness and efficiency. Overstating the urgency of a request for support undercuts the system and results in the diversion of resources from the main effort.[8]

A logistics system enforces discipline through the establishment and administration of priorities and allocations. Nevertheless, no set of procedures will be effective without the commitment of the people who use and operate the system to make it work. Discipline starts with the commander. The commander of a unit must set the standards and enforce discipline

within it. Discipline must also extend throughout the organization. In war, as in most other human endeavors, the most important form of discipline is self-discipline. Self-discipline makes it possible for individuals to subordinate their personal needs, desires, and interests to the greater good of their unit, their Service, and their country. More specifically, self-discipline enables a hungry Marine to distribute rations fairly, a tired Marine to doublecheck the details of a requisition, and a scared Marine to go into harm's way to make a repair or deliver ammunition.

Attention to Detail

Logistics is a highly complex enterprise in which no simple theories or easily learned management techniques can substitute for detailed knowledge of a wide variety of subjects. Logistics involves dealing with, among other things, people, money, equipment, ammunition, fuel, food, water, ships, aircraft, roads, ports, and medical services. Each of these, moreover, has a logic of its own. For this reason, a logistician must be a master of detail. The logistician must be able to understand, in all its complexity, the reality represented by a long list of items or the abstract codes on a computer printout. The logistician must be able to see patterns that arise from raw data, establish the relationships between small problems, and discover the root causes of big ones. In solving these problems, the logistician must use the full powers of a Marine leader to devise and implement systematic solutions. In most cases, these will involve alterations to existing procedures and, usually

more important, a mixture of training and education that alerts other Marines to a problem and empowers them to deal with it.

Responsiveness

Responsiveness is often the yardstick by which effective logistics is measured. Stated simply, responsiveness is the ability to provide the right support, at the right time, at the right place. *It is through responsiveness that we build confidence in our logistics system.* A responsive logistics system makes logistics a force multiplier; a nonresponsive logistics system is an anchor holding back the efforts of the entire organization. It is in responsiveness that the real alliance between logistics and operations is either established or dissolved. For this reason, responsiveness is an essential characteristic of logistics.

Planning, procedures, information systems, and other parts of the logistics system help develop responsiveness in the system, but it is *the attitude and skills of the people who operate the system that determine whether it will be responsive*. Logisticians understand that war stimulates requirements which cannot be predicted through usage rates or maintenance schedules. Not only are logisticians responsible for identifying and providing the tangible, quantifiable elements of making war, but also through their service they provide reassurance and peace-of-mind that the needs of the force will always be met.

If they are to anticipate requirements and provide responsive support, logisticians must possess a broad operational perspective, superior technical skills, initiative, flexibility, and a

notable sense of innovation. Logisticians must thoroughly understand the commander's intent and concept of operations in order to formulate the functional and detailed logistic plans. They must have a thorough knowledge of tactics and operational art and understand how the commander thinks—factors which do not always maximize the potential for logistic efficiency.[9] Knowledge of the plan and commander's intent facilitates the anticipation of requirements. Situational awareness and tactical experience alert the logistician to the possibilities of what might happen in the fluid battlespace. This is not a new concept. In an April 6, 1864, letter to the Commissary General, General William T. Sherman described the ideal commissary officer as one who "would converse with me freely, learn my plans, the strength of my various columns, routes of march, nature of supplies, and everything, and who could direct the harmonious working of the whole machine."[10] Moreover, "the logistics officer needs to position himself far enough forward to stay abreast of the tactical situation and react quickly to changing operational demands as he sees them developing. Being an efficient order-taker is not enough."[11] To be responsive, logistics must be flexible enough to accommodate the ebb and flow of operations. We must develop and nurture our logisticians to ensure they have the necessary skills to make this happen.

Doctrine

Doctrine represents the fundamental teachings of our profession. It establishes the way we practice our profession, providing the basis for harmonious action and mutual understanding. All Marine Corps doctrine is based on maneuver warfare. As discussed earlier, all our logistics capabilities are designed to enable us to carry out the philosophy of maneuver warfare. Likewise, logistics doctrine is derived from our doctrine of maneuver warfare. As developed in this publication, *logistics doctrine requires the execution of logistics in a manner which allows us to seek and exploit opportunities, to expand, not restrict, our operational possibilities, to develop a concept of logistic support in accordance with the commander's intent and the focus of effort, and to help generate and sustain a high tempo of operations*. This logistics doctrine establishes a common perspective for the conduct of the logistics function throughout the Marine Corps. It forms the foundation for the development of detailed tactics, techni- ques, and procedures for the execution of various logistics processes. Finally, logistics doctrine provides the basis for education and training in logistics.

Education

Professional military education is a continuous, progressive process of development. As leaders progresses, they come to understand the techniques and procedures of their particular military specialties and the interrelationships between different fields in the Marine Corps. Because logistics is an integral and

inseparable part of warfare, *all Marines* must develop a sound understanding of the importance of logistics, the interrelationship of logistics and operations, the characteristics of our logistics capabilities, and the functioning of the logistics system. Marines must be educated in the capabilities and limitations of logistics, know how the logistics system works, and learn the procedures and techniques for requesting and receiving support. Most importantly, *they must understand how and why logistics sets the limits on operations and what they must do to ensure effective support for their units*.

Likewise, the professional education of the logistician cannot focus merely on the techniques and procedures of the logistics system; it must begin with the study of the larger art of war. Before logisticians can judge the soundness of a particular approach to operational logistics, they must understand the design of the campaign. Before they can determine the utility of a particular technique for combat service support, they must understand the character of the supported force. Thus, the traditional means of studying the art of war as a whole, particularly the study of military history, theory, organization, technology, and geography, as well as the playing of war games, are as useful to logisticians as they are to any other military professionals. Building upon their knowledge of the larger art of war, logisticians need to develop particular insight into logistics itself. Resources available for this include studies of the role played by logistics in particular campaigns, war games in which players are required to consider logistic factors and make decisions about logistics, and the technical literature

dealing with all of those things—from transportation infrastructure to information technology—that have an impact on logistics.

Training

Training is the key to combat effectiveness. An effective logistics capability is developed through continuous, progressive, and challenging training. All Marines must be trained to carry out their personal logistics responsibilities from the maintenance of individual weapons and equipment through the exercise of proper logistics discipline. Marines in the logistics specialties must master the techniques pertinent to their particular occupational field. Combat and combat support units must practice logistic procedures in conjunction with their regular training. Logistics units must conduct unit and collective training, developing teamwork while mastering the tactics and techniques required to provide effective support. Integrated training among logistics units and the units they support is essential. Integrated training builds an appreciation for each other's capabilities, limitations, and requirements while providing the opportunity to develop and refine support concepts and procedures. Finally, it is critical that training prepare Marines to function effectively in the environment of combat. *Logistics capabilities must be stressed and tested in a realistic manner during training exercises.* Exercises which use garrison resources or methods to provide logistic support do not provide effective training for logistics units and create a false sense of security in the minds of supported commanders.

Procedures

While logistics as a whole, or even the support of a specific unit, cannot be reduced to a pattern, there is much to be gained by the use of standard procedures. Procedures assist in our effective conduct of logistic operations by helping to overcome friction and guiding actions in an environment of uncertainty. Well-designed and properly employed, standard procedures can simplify routine tasks and thus greatly increase the efficiency with which certain duties are fulfilled. They can also help impose discipline in the logistics process. Finally, standard procedures can help integrate logistics capabilities across the three levels of logistics and among the various agencies that participate in the logistics process. The closer the resemblance between the forms, practices, and procedures used within the Marine Corps and those of the outside world, the easier it will be for Marines to coordinate with outside agencies, businesses, facilities, and equipment.

Standard procedures are, however, a double-edged sword. Poorly designed or improperly employed, standard procedures can deprive logisticians of the power to act. *Our use of logistic procedures is always guided by the commander's intent and the priorities which result from the application of that intent or other commander's guidance.* Those who use a procedure must be able to understand its purpose as well as the methodology behind what they are doing. This understanding not only increases the chances that the procedure will be used properly but also reduces the temptation to work around the system when there is no need to. In addition, a procedure whose

purpose and function are well understood is less likely to be used in circumstances where it does more harm than good.

Our logistic procedures should be designed for simplicity and speed. They should be designed for simplicity so that we can master them easily and perform them quickly under conditions of uncertainty and stress. They should be designed for speed so that we can generate tempo.

Organization

The Marine Corps employs a basic organization for the conduct of operations, the MAGTF. Every MAGTF has an inherent combat service support capability. However, the specific combat service support capabilities resident in a particular MAGTF will be tailored to the anticipated requirements of the MAGTF's mission. Thus, Marine logistics organizations reflect the central requirements of all Marine organizations: deployability and the flexibility to task-organize. *In developing the logistics organization appropriate to a particular situation, we attempt to ensure unity of effort, effective command and control, efficiency in the employment of resources, responsiveness to the supported units, and flexibility to adapt to changing circumstances.*

In peacetime, the organization of most logistics units is based on a particular logistics function: supply, maintenance, motor transport, medical, and engineering battalions are examples. This type of organization provides efficiency in the delivery of services in response to a wide variety of garri- son,

contingency, or training and exercise requirements. For operations, our logistics organization usually combines a number of functional capabilities into a single unit. Task-organized combat service support elements or detachments provide logistics capabilities tailored to the anticipated requirements of specific operational units.

This organizational concept helps provide commanders with the support they need while using limited logistic resources effectively and efficiently to carry out the overall operational design. However, implementing this type of organizational concept presents a different challenge than employing a single, standard logistics organization. Commanders of logistics units must be able to provide manned, trained, and equipped components of their units capable of operating independently from the parent organization. Logistics personnel must be flexible and creative in their ability to tailor their organizations and equipment for a variety of missions and environments. Finally, they must thoroughly understand their own capabilities as well as how their capabilities complement those of other logistics units in supporting the overall operation in order to rapidly create an effective, integrated combat service support element.

The flexibility and capability inherent in Marine logistics organizations was demonstrated during Operation Desert Storm. To support the 92,000 Marines participating in Desert Storm, the Marine Corps deployed two full force service support groups made up of almost 14,000 Marines and Sailors. The 1st

Force Service Support Group primarily carried out general support logistics functions for the entire Marine expeditionary force. It was organized largely along functional lines and ensured the receipt of services from the ports and airfields and their delivery to the major tactical formations.[12] The 2d Force Service Support Group provided direct support to the combat forces. It was organized into a number of task-organized combat service support detachments. The capabilities of each of these detachments were tailored to the needs of the supported operational unit and appropriate elements of the combat service support detachment were designed to accompany the supported unit as it advanced into Kuwait. The result was a fully integrated logistics organization which provided the full range of logistic support from the arrival of resources in theater through the delivery of specific supplies or services to units engaged in tactical evolutions.

Equipment and Technology

Equipment used by the Marine Corps must be supportable. *In developing new weapons or systems, logistics considerations should be balanced with performance characteristics to reduce rather than increase logistics requirements whenever possible.* To meet the requirements of a force-in-readiness, our equipment must be deployable by our strategic, operational, and tactical transportation systems. To function in the expeditionary environment, our equipment should be efficient to operate and easy to maintain. We should pursue standardization to ease the problems of interoperability and increase the efficiency of the logistics systems. Standardization, however, is not an

end in itself. The case of the officer who prevented Union acquisition of repeating rifles during the American Civil War illustrates the limits of standardization. In this case, the desire to preserve a single standard for rifle ammunition prevented the acquisition of a weapon that would have had a revolutionary impact on the battlefield. Finally, in procuring weapons and equipment, we must take a long-term approach; we must buy not only the individual weapons or systems but the maintenance capabilities, parts, and training required to keep the equipment operational throughout its life cycle.

Like other Marines, logisticians make use of a great deal of equipment. Like other military equipment, that used by logisticians should be simple, robust, and adaptable. In addition, because of the close connection between logistics and the civilian worlds of commerce and industry, equipment used in military logistics often has to be compatible with existing standards of size, weight, data transmission, voltage, and the like. This leads to a strong prejudice in favor of using off-the-shelf rather than custom-designed equipment for the performance of logistics functions.

Technology is becoming increasingly important in the execution of all military functions. *We employ technology in logistics to enhance the performance of our logistics personnel.* In this way, logistics information systems act as a force multiplier in the battlespace. They enhance logistic planning and execution by helping to process support requests, track resources, store consumption rates and usage data, estimate

future requirements, develop schedules, and monitor the progress of ongoing activities. Logistics information systems contribute to situational awareness by exchanging detailed information among various logistic elements as well as among logistics, operations, and plans sections. These systems also aid in communicating decisions concerning the allocation, distribution, and movement of assets. We use technology to automate routine functions and improve the flow and value of information within the system. At the same time, we realize that technology is a tool to assist us; technology does not provide the understanding and judgment required to operate an effective logistics system.

CONCLUSION

Logistics is an integral and inseparable part of war. Our approach to logistics recognizes and accepts war as a complex, uncertain, disorderly, and time-competitive clash of wills and seeks to provide the commander with the physical means to win in this environment. We seek logistics capabilities that extend our operational limits and that allow us to anticipate requirements while remaining flexible, adaptable, and responsive to the changing conditions in the battlespace. Marine logistics capabilities are based upon our warfighting philosophy of maneuver warfare. Our logistics support and enhance the conduct of operations which are oriented on the enemy, have a specific focus of effort, are conducted in accordance with the

commander's intent, and help generate and maintain a high tempo of operations. Marine logistics are expeditionary in nature and naval in character. They are built on core capabilities at the strategic, operational, tactical levels; they are conducted through integrated and flexible planning and the exercise of responsive command and control. People are the foundation of Marine logistics. Marine logistics depends upon the exercise of leadership, discipline, attention to detail, and responsiveness by both the users of the logistics system and the persons who work within that system. Our doctrine, education, training, organization, procedures, and equipment provide the means for implementing Marine logistics. These components of our logistics capability reflect the unique requirements of maneuver warfare and our expeditionary nature. Together with our personnel, they provide a common basis for the conduct of effective logistic activities across the range of military operations.