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BASIC ELEMENTS OF NAVAL LOGISTICS

A lecture delivered by
Captain H. E. Eccles, U. S. N.
at the Naval War College
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Napoleon's Russian campaign is the classic example of military disaster caused by the failure properly to estimate the logistic situation. Two striking examples of military defeat caused by a breakdown or interruption of logistic support are found in the fall of the Confederacy and in Rommel's North African campaign.

In World War II we have recently seen two examples of success built on the foundation of a vast trans-oceanic logistic system, Eisenhower's European campaign and the war in the Pacific. In each case unremitting pressure was made possible by a successful logistic support system. Many more examples can be cited to show the place of logistics in warfare, but none should be necessary.

For the last hundred and fifty years there has been a steady increase in fire power of all combat units. This, of course, requires an increase in the amount of logistic support required to maintain one combat soldier or sailor in the war zone. The present acceleration of this trend emphasizes the continuing need for a greater logistic efficiency and better understanding of the problem. There are two ways in which a logistic support system can break down: one, of course, is by enemy action, and the other is by its own inefficiency. Regardless of the cause of such breakdown, the result is always the same; it is always a marked decrease in combat effectiveness.

This discussion is not concerned with the strategy and tactics required to cut an enemy's lines of transport and supply. Rather it is concerned with a discussion of logistic efficiency. In World War

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II, in spite of much waste and inefficiency, our logistic support systems worked. This, however, should not lead us to assume that a similar method will be satisfactory in a future war.

The basic situation under which we will fight will probably be entirely different: we shall have to fight in an economy of relative scarcity as opposed to the economy of plenty in which we fought most of World War II. In case of another war the United States will have to be prepared to undertake extensive overseas operations immediately upon the outbreak of war. We will not have the time to build up behind the screen of a so called "phoney war" and strong allies before we become actively engaged in combat. Also it is quite likely that the industrial plant of the continental United States will be physically damaged by enemy action. The extent of this damage is, of course, impossible to predict but extensive damage can easily be caused by long-range air bombardment, guided missiles launched from enemy submarines, or sabotage. Finally, the improvements in modern submarines pose an increasing threat to our lines of communications to our overseas forces and may have a serious effect on our imports of strategic raw materials. Because of these conditions we must search out every means of increasing our logistic efficiency.

As we look at the history of various engineering developments we find that in each instance major advances in efficiency have been based upon an increased knowledge of theory and principle. In 1903 Wilbur and Orville Wright, while they knew very little about the theory and principle of aerodynamics, were able to build an airplane that flew. However, the progress from 1903 to 1949 in both the internal combustion engine and the airplane itself have both been based primarily on an increased knowledge of the theories and principles of engineering and aerodynamics. And so it behooves us to seek an understanding of logistic theory and principle in order that we may improve our logistic efficiency.

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First comes the question of the definition of Logistics. Just what is Logistics? There are many definitions, some of them quite long and detailed. For example, there is the definition given by Doctor Duncan S. Ballantine in his book, "U. S. Naval Logistics in the Second World War":

"In its broadest definition the term logistics signifies the total process by which the resources of a nation—material and human—are mobilized and directed toward the accomplishment of military ends. Officially naval logistics has been defined as 'the supply of material and personnel, including the procurement, storage, distribution and transportation of material, and the procurement, housing, training, distribution and transportation of personnel together with the rendering of services to Naval operating forces'."

The JCS definition currently effective is:

"That part of the entire military activity which deals with production, procurement, storage, transportation, distribution, maintenance and evacuation of personnel, supplies and equipment; with induction, classification, assignment, welfare and separation of personnel; and with facilities required for the support of the military establishment including construction and operation thereof. It comprises both planning and implementation."

In my opinion neither of these definitions is wholly satisfactory for our purpose of developing theory and principle, and therefore I offer instead a very broad general definition which has been derived from Colonel Thorpe's excellent little book "Pure Logistics", published in 1917:

"Strategy and Tactics provide the scheme for the conduct of military operations; Logistics provides the means therefor."

In amplification of this we may consider that the means

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for the conduct of military operations are **MEN, MATERIALS** and **SERVICES**.

Within the framework of this broad definition all the other more exact and precise definitions can be included. Furthermore, this broad, simple definition has the great advantage of relating Strategy, Tactics and Logistics.

In order to understand the importance of this relationship let me digress a moment. In the study of war we are interested in reality rather than in mere words; and, while words are necessary for us to formulate and exchange ideas, yet we must never feel that words in themselves have any reality. They are merely symbols and regardless of what symbols we use to express our formulation of this complex reality that we call war, the words themselves are merely the symbols or the means of conveying these ideas. In dealing with a reality which is as complex as modern war it is understandable that what any particular individual sees will depend very largely on his point of view. That is not a new thing because all through human life various people will look at the same thing and yet will give a different interpretation of the reality that they see in that object. In some instances the differences resulting from differences in point of view will be very marked; in other cases they may be minor, but differences always exist. For example, if we consider medicine and anatomy, doctors look at the human being in different ways depending on their specialty. If, for example, we ask in succession a nerve specialist, an orthopedist, or an eye, ear, nose and throat specialist to discuss human nature, behavior and weakness, we will find that quite likely there will be three different points of view expressed. In medicine we have the advantage of many years of study in the development of a precise, scientific terminology, but even then the discussions of the same thing will vary as these three specialists focus their attention on

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different aspects of the same reality. We can easily realize that their difference in point of view in no way affects the reality of human nature and behavior.

And so as we look at war we each of us may see it in a different perspective. The strategist, the geopolitician, the logistician and the economist will all tend to emphasize different but related aspects. In war we do not have a precise and exact scientific language with which to express our ideas. In war we are dealing with many intangibles, intangibles of the human mind and the human spirit, and we are not in a position where we can make precise and controlled scientific experiments to further our knowledge of war. Therefore, we must expect that our four different points of view will produce four very different discussions of war.

As we study war we find more and more that it is necessary to develop broad and comprehensive understanding. Breadth of understanding implies understanding of the other man's point of view. The fact that we may have very different points of view in our discussions of war does not in any sense imply that war itself is different or that the difference in the way two individuals express their concepts of war indicate that one is wholly correct and the other incorrect.

A useful illustration of how logistics, economics and war are related is found in a sentence from a recent Munitions Board presentation:

“The logistic process is at one and the same time the military element in the nation's economy and the economic element in its military operations.”

The understanding of any complex entity or subject requires a study of its structure. I consider that Logistics has a definite structure, that a knowledge of this structure is essential to a knowledge of the nature of Logistics and its relationship to

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war, and I believe that substantial agreement as to this structure will be required before we can go very far in developing sound theories and principles of Logistics. So I offer the following formulation of structure for your consideration and criticism. Logistics is composed of fundamental elements and basic aspects. I consider that the fundamental elements are: The Determination of Requirements, Procurement and Distribution; the Basic Aspects are Organization, Planning, Execution and Supervision. No matter what our task may be in Logistics we will find these elements and aspects, and these elements and aspects blend and overlap in a manner which varies greatly according to circumstances. Every logistic problem starts with the determination of requirements; the next step is the procurement of these requirements; the final step is their distribution. No matter what element we are dealing with we must organize, plan, execute and supervise.

Taking up our basic elements let us first consider requirements. The determination of requirements is considered to be part of "consumer logistics", and as such is under military control. There are many factors in the determination of requirements, but the most important in my opinion are six in number. In the first place, all logistic requirements to be realistic must stem from specific strategical and tactical plans. The questions are: What combat forces must we provide for? Where are they going to be operating? When are they going to be operating? And in what manner are they going to operate? The civilian economy is very important because our entire military machine is based on a sound civilian economy. If we permit this civilian economy to disintegrate, ultimately this disintegration will spread with disastrous effects upon the combat forces. Therefore, in determining our national requirements we must be sure to provide for all the human and material needs of our civilian economy. This, of course, makes major additions to the demands upon our overseas shipping for the importation

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of strategic materials. At the same time we must never forget that we have allies who must be supported, and that there are benevolent neutrals whose benevolence it pays us to insure by continued support to their economies. We should never forget that the military government of the occupied areas makes further imperative logistic demands and we must provide for them. In World War II we did not fully understand the necessity for this; for instance, in 1943 during the Italian Campaign the American Army operating in Italy was deprived of certain shipments of ammunition because the ammunition that had been scheduled to sail was cancelled in order to provide room for wheat for the civilian population of Italy. In the latter part of the war we overcame this deficiency and planned for our military government needs, but it was most embarrassing to the combat forces to find that ammunition had to yield to civilian food.

In all estimates of requirements we must ascertain the state of our resources in personnel, material, weapons and facilities, and correlate our data to arrive at the final estimates.

It is only when we have made this complete determination of requirements and compared it with the state of our resources that we are in a position to determine the manner in which logistic considerations may limit our strategical and tactical plans.

Next in the field of fundamental elements is the question of procurement. This comes under the heading of "producer logistics" and is generally under civilian control. Military procurement is based primarily on industrial mobilization, which is the orderly coordinated mobilization of all material and human resources of the nation for the most effective conduct of war. It requires expansion and establishment of production facilities, major conversion of production facilities, a very high degree of planning, and the formula-

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tion and issuance of preliminary educational contracts which extend into actual trial production. Furthermore, industrial mobilization must always include consideration of the mobilization and allocation of manpower to industry. The Industrial College of the Armed Forces is a splendid institution which is primarily concerned with the study of industrial mobilization. In all matters of procurement we must at all times be fully conscious of the implications of lead time. Lead time may be defined as "the interval between the time of the decision to provide an item to the combat forces and the time such an item is delivered to these forces in adequate quantity and in reliable operating condition for use against the enemy." The reliable operating condition means that there is an adequate supply of trained personnel both for operation and maintenance. This question of lead time enters into almost every logistic problem that can arise in war, and its understanding is a matter of the most urgent importance to all officers. Lead time may vary from a few hours in the case of certain reserve materials which are in ready supply in the combat areas, to five or ten years for new types of ships or planes or other complex equipment.

The provision of reliable operating and maintenance personnel and spare parts is a very important factor in lead time. For example, in 1945 the Navy undergoing Kamikaze attacks off Okinawa was very much interested in obtaining airborne early warning radar. The Navy Department had developed and tested an airborne early warning system and yet the department refused to send it to the forward areas. That decision was perfectly correct because had this system been sent forward it would have been no real protection; rather it would have been a delusion or false protection, because at that time we did not have the personnel or know how to maintain it in reliable operating condition.

There is a further but narrower definition of lead time which is also important, and in this meaning it indicates the length of time necessary to package, ship and deliver to the combat forces materials which are in ready supply in the zone of the interior.

We come next to the element of distribution. Distribution is part of "consumer logistics" and it is primarily under military control. Distribution picks up where procurement leaves off and in this pick up there is a very high degree of overlap. Distribution normally extends from the depots and warehouses in the continental United States throughout the entire combat area up to the point where the bullet is placed in the gun or the beans in the mess kit of the ultimate consumer.

Transportation and distribution are almost synonymous. In this connection it is always well to remember that transportation must be responsive to the needs of the combat command. Again, lead time is important. The narrower definition of lead time given previously applies primarily to distribution.

Having discussed very briefly the fundamental elements we will now take a look at the basic aspects. First, as to organization—logistic organizations are large, complex and in many instances controversial. It is interesting to note that many of the controversies that existed in the Army in the period in which the general staff was developing had their roots in the logistic problems. Many of the arguments that are now taking place in Washington within and among the three services stem from logistic causes.

In actual size our logistic organizations are much larger than our combat organizations, and therefore no discussion of logistics can in any way be complete without consideration of organization. Organization is not a dead or static thing. Organization is a living thing, and as such it must be constantly re-examined and revised

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as circumstances dictate. In spite of the tremendous variety of good organizations that exist there is usually found in any good organization an adherence to sound and well understood principles. If we are to depart from these principles (and such departure is frequently warranted), we should do it with an awareness that we are violating a principle rather than do it out of ignorance. Every time you violate a principle of organization you pay a price; sometimes the payment of that price is worthwhile, but not always.

The commander of any force is always responsible for the organization of his force and our commanders should be constantly aware of the urgent necessity for maintaining our peacetime organizations in such form that there can be a swift transition from peace to war without changing the essential structure of the organization. Peacetime logistics are relatively simple; in war they are very complex. If for the sake of immediate economy we allow our peacetime organizations to take a form which is unsuited for war, when war comes, the commander himself will have to revise that organization, and such revision will greatly intrude on the time that he would greatly prefer to devote to strategic and tactical problems of the most urgent nature.

When we consider the question of logistic planning we must recognize the fundamental principle that strategic and logistical planning are inseparable. No logistic plan has any value unless it is based on the specific strategic plan, and no strategic plan has any value unless it can be logistically supported.

The always present factor of lead time makes concurrent planning mandatory. The Joint Chiefs of Staff are now so impressed with the necessity for this concurrent strategic and logistical planning that in their forthcoming "Joint Action Armed Forces" they propose to say that strategic and logistical planning must be concurrent and must precede tactical planning.

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The final aspects are execution and supervision. Actually, it is hard to make an accurate distinction between these two, and therefore they will be considered together. It is well to remember that a good plan, well executed, is better than a perfect plan poorly executed. Therefore, we should not seek too much perfection in our plans, but should sometimes be prepared to say "Let well enough alone" and proceed with the execution in spite of known imperfections. In this connection let us remember the fact that a logistic plan in wartime acquires great actual physical momentum. A major operation requires the movement of hundreds of thousands of tons of material extending over many months and over many thousands of miles of land and sea. While it may be possible with good and flexible planning to change the direction or somewhat modify the timing of an offensive operation, it is very difficult to reverse its flow.

Perfection in planning can never be a substitute for imagination, initiative, judgment and determination in the execution of the plan.

Continued progress in planning and in the execution of plans will depend upon the analysis of results. In other words, logistic operations require the same careful analysis and supervision of the planned action as do purely combat operations.

Let us pass from the broad general view of Logistics to consideration of Navy Logistics. You are all familiar with the present organization of the Navy. It is excellently portrayed in the pamphlet "The United States Navy", published by the executive office of the Secretary in 1948. If we examine the description and discussion therein we find that through the Civilian Secretaries and the Bureau system there is a high degree of civilian control of "Producer Logistics". And we find that through the Chief of Naval

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Operations, the Frontier, District and Fleet Commanders there is military control of "Consumer Logistics".

All Naval planning stems from the Joint Chiefs of Staff and the Chief of Naval Operations and is in three general groups. The first stage plans consist of statements of missions and tasks. The second stage plans consist of the Basic Naval Establishment Plan, the Basic Mobilization Plans, the Basic Logistic Plan and the Strategic and Logistic Code plans. Finally, the third stage plans consist of the Supporting and Subsidiary Plans stemming from the Code Plans and the amplifying detailed plans prepared by the Commanders afloat and ashore who actually execute the plans.

This excellent planning method which evolved out of the experience of World War II provides a flexible, decentralized system which is in harmony with sound principles of organization and command.

Thus, we have a sound National Defense Organization and a sound Naval Organization and Planning system as a basic structure through which Strategy, Logistics and Tactics can be harmoniously related. There remains the ever vital task of educating our officers to understand and use the system .

This sound basic support planning system is put into actual execution through four related types of Naval operating organizations. These are: The Continental Shore Establishment, The Advanced Shore Bases, The Floating Bases and The Mobile Logistic Support Forces and Groups. It is through these organizations that the Naval Supply System distributes to the fleet the myriad of material supplies that are the lifeblood of our seagoing forces. It is through these organizations that the services and men are channeled to the fleet. These organizations are linked and fed by transportation systems both sea and air. And again for emphasis let me

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remind you that transportation must be responsive to the needs of combat command.

A successful offensive requires and acquires momentum. Successful war is not a one-two punch, but rather a long succession of punches and the closer one punch follows the previous one the more the enemy is kept off balance, the less the losses of the attacker and the greater the losses of the defender. This timing is vital and is determined primarily by logistic considerations.

It is obvious that all fighting power ultimately rests upon logistic support which is derived from the land. Thus, while we recognize that ships are dependent upon the land, we must never forget that the fighting ship, more than any other military weapon, has within itself inherent mobility and a capacity for self-sustenance. Hence, many combat operations can be conducted with the initial load of supplies that the ships themselves carry. However, sustained fighting power requires sustained support. This sustained support which gives real combat mobility to our Naval forces is provided through the coordination of our Shore Establishment, Advanced and Floating Bases and our Mobile Logistic Support Forces.

The use of the Task Force Type of Organization provides us with great flexibility; therefore, forces can be constituted, assigned missions and provided with adequate attached logistic support merely by a simple dispatch.

We must never forget that the Fifth Fleet was able to fight off Okinawa for 90 days supported entirely by the Mobile Logistic Support Force, Service Squadron Six, and that it was this support that made that sustained fighting power possible.

Summing up this greatly simplified discussion of basic Naval logistics, let me re-state my structural formulation.

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Strategy and Tactics provide the scheme for the conduct of military operations; Logistics provides the means therefor.

The means of war are Men, Materials and Services. The Fundamental Elements of Logistics are the Determination of Requirements, Procurement and Distribution.

The Basic Aspects are Organization, Planning, Execution and Supervision. In all cases these elements and aspects blend and overlap in a manner and degree which varies according to circumstances. When properly integrated with strategic and tactical considerations they combine to form a sound and harmonious structure of flexible, mobile, and sustained fighting power.