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EVOLUTION OF THE CONCEPT OF LOGISTICS

Although many efforts have been made to define precisely the concept of logistics, there remain today many shades of meaning for this term. It is important to understand precisely what the concept encompasses in order that planning and communication may be facilitated.

An article prepared

by

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Logistics has been, is, and probably will continue to be a most controversial military subject. There is absolutely nothing wrong with controversy when it leads to better understanding, better organization, or better operations. With regard to military logistics, however, these objectives have escaped our grasp time and time again because very few of us have ever appeared to be talking about the same thing. One has only to compare any two definitions of logistics to get the point. Yet, if you were to compare all of the definitions of logistics that are available, you would recognize that logistics is a function of warfare, that it has social and economic purpose, that it is a function of the organization, and that most of these definitions say the same things even though they differ widely in detail.

Reading definitions is a rather dry academic pursuit which should be left to academicians. On the other hand, most of us are deeply interested in understanding our profession, and logistics is a part of it. This article proposes to improve that understanding through an investigation of the origins of the word logistics and its conceptual applications to military organizations from its first use by the French Army of 1670 to its more recent use by U.S. Armed Forces in World War II. There then follows a brief look at developments concerning logistics in the post-war period. These have been sponsored by the services. The article concludes by describing a research study undertaken to resolve the current confusion surrounding the military concept of logistics.

The Origin of the Military Word Logistics. In the beginning there were two words, *logistikos* and *logisticus*. The first is Greek, the second, Latin, and they both had the same meaning—calculation or reasoning in a mathematical sense. At some later time the word took on a second meaning, so that today *logistics* in current usage can take either one of two totally different definitions. The first meaning, to reason mathematically, has remained constant for centuries.

We can trace the second meaning of logistics back to some obscure early usage of the latin root, *log-*. Latham states that *loglugea*, a noun meaning lodge or hut, appeared in records dated 1350; and *logio*, a verb meaning to lodge or dwell, appeared in 1380.¹ He attributes the French verb, *loger*, meaning "to lodge" to this Latin antecedent, and we might note that the root's usage is current. You can still buy a ticket for a loge seat in some local movie theaters.

The French verb *loger* leads us directly to the second meaning of logistics. As civilized societies grew out of the Medieval Age and began to acquire sophistication, so too did the nature of the warfare in which these societies engaged. Armies grew in size, and the problems of administering them also grew. Sometime near the year 1670 an adviser to the French King, Louis XIV, proposed a solution for these military problems in the form of a new staff structure for the army. One of the newly created positions was that of *Marechal General des Logis*, whose title came from the verb *loger*. This officer was responsible for planning marches, selecting camps, and regulating transportation and supply.² This instance appears as the first application of the new meaning of logistics and the first organizational usage of logistics as we recognize it today.

There are some who would argue with the last point by recalling that

there was an officer in the Roman Army called the *Logista*. However, Latham states that the first recorded usage of the term occurred in 1574 and that it was the title for an accountant. This seems perfectly in keeping with the first meaning of logistics and the early Latin word *logisticus*. Even if the title was used in the Roman Legions, probably the official would have been a paymaster or an administrator. There is another argument that traces from the title of Quartermaster General. That title appeared in European armies at about the same time that the French created the *Marechal General des Logis*.³ Since, as we shall see later, the two titles mean essentially the same thing, the argument goes that the earliest logistician was called the *Quaestor*, another official of the Roman Army. However, Latham states that this office originated as a judge, or more properly as an inquisitor, and later it became the title of the paymasters of the legions. From another source, H.M.D. Parker, who is an authority on the Roman Army, we find that neither *Logista* nor *Quaestor* were used as titles for legionary officers. Instead, he lists the *Præfectus Castrorum* (person in charge of the camp), and he describes this officer as a sort of glorified quartermaster who in time of peace was in charge of the camp and the specialists who were assigned to it. In time of war this same officer was in charge of the legionary train and supervised the provision of supplies.⁴

Although we could go into greater detail in investigating the origins of the logistics profession, it seems enough to say that someone has always had to furnish supplies and transportation for military forces. That office has had a number of titles down through history, but it was the French who gave us the modern term logistics. Very soon after the creation of the office of *Marechal General des Logis*, his duties were being described as *la logistique*.

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Early Application of Logistics. Jomini first used the term *la logistique* which has been translated to English as logistics. He can be called the "father" of military logistics. He drew upon his experiences in a number of wars, principally from those campaigns when he was a staff officer for Napoleon, to write the following:

If it be acknowledged that the ancient logistics was only a science of details for regulating everything material in regard to marches; if it be asserted that the functions of the staff embrace at this day the most elevated functions of strategy, it must be admitted also that logistics is no longer merely a part of the science of the staff, or rather that it is necessary to give it another development, and to make of it a new science which will not only be that of the staff but that of generals-in-chief.⁵

The duties of the *Marechal General des Logis* expanded and took on new dimensions. Logistics did not long remain on this high plane. In fact, it was eclipsed and, as we shall see, remained virtually so until World War II. The man who cast the shadow was none other than Karl von Clausewitz. In a very short span of time, the leading military men of the world adopted the Prussian interpretation of Clausewitz's theory of war. Since he makes no mention of logistics in all of *vom Kriege (On War)*, the concept of logistics lost most of the military meaning that Jomini had given it.⁶ For example, about 40 years later, in 1876, an English major general published a dictionary in which he defined logistics: "With reference to military science, it is the study of the military resources of countries, which forms part of the information gathered by the intelligence department of armies."⁷

Edward S. Farrow, an instructor of

tactics at West Point, in 1895 brought logistics back toward its original meaning but probably fathered a misconception mentioned earlier:

Bardin considers the application of this word by some writers as more ambitious than accurate. It is derived from Latin *Logista*, the Administrator or Intendant of the Roman armies. It is properly that branch of the military art embracing all the details for moving and supplying armies. It includes the operations of the ordnance, quartermaster's, subsistence, medical, and pay departments. It also embraces the preparation and regulation of magazines, for opening a campaign, and all orders of march and other orders from the General-in-Chief relative to moving and supplying armies.⁸

A few years earlier, in 1888, Lt. Charles C. Rogers, USN, introduced the subject of Naval Logistics at the Naval War College, just 4 years after the institution's founding. Since that time the subject has had varying degrees of importance and emphasis in the curriculum.⁹ The nature of the subject as it was studied there just prior to World War I is illustrated by this quotation from a lecture presented by Comdr. C.T. Vogelgesang, USN, in 1911: "... Logistics comprehends all the operations conducted outside the field of battle and which lead up to it, it regulates the execution of those movements which in combination become the functions of strategy . . ."¹⁰

Logistics had not yet regained the position of a new science of warfare accorded to it by Jomini. A bright spot did appear in a book written in 1917 by Lt. Col. George C. Thorpe, a Marine and a graduate of the Naval War College. The book was called *Pure Logistics*, and in its preface Thorpe resurrected Jomini:

The terms "pure" and "applied" may be used with the same meaning as to Logistics as to other sciences. Pure Logistics is merely a scientific inquiry into the theory of Logistics—its scope and function in the Science of War, with a broad outline of its organization. Applied Logistics rests upon the pure, and concerns itself, in accordance with general principles, with the detailed manner of dividing labor in the logistical field in the preparation for war and in maintaining war during its duration.¹¹

Thorpe's influence was not immediately felt. In fact, many continued to regard logistics solely in terms of its application. For example, Farrow revised his dictionary again in 1918 and in it offered a definition of logistics which was succinct in comparison with his earlier work: "*Logistics*—That branch of the military art which embraces the details of moving and supplying armies."¹²

Bringing Logistics Up to Date. A number of definitions of logistics that appeared during the 1920's and 1930's said essentially the same thing that Farrow said in his last revision. Logistics was in the doldrums. Apparently, nothing of note was done organizationally or otherwise that could have given logistics a push either in theory or in practice. However, World War II changed the situation—it made logistics a household word.

The task of moving and supplying armies assumed by our Nation during World War II was greater than ever before experienced in military history. Troops and supplies were moved to the South, Central, and North Pacific Ocean areas; to China, Burma, and India; to Russia through the Persian Gulf and to the Barents Sea; the Mediterranean; and, of course, to Europe. The Army judged

its prewar organization inadequate for this huge task. Accordingly, it reorganized early in the war to form the Army Service Forces along with the Army Ground Forces and the Army Air Forces. The Service Forces seemed equal to the task of moving and supplying armies all around the world, but in the opinion of the headquarters staff, the words "supply" and "service" were not. Logistics seemed more appropriate, and by the time the organization disbanded, following the war, its use had become official. The Army Service Forces' final report was titled *Logistics In World War II*, and its introduction explained the use of the word in this manner:

The word "logistics" has been given many different shades of meaning. A common definition is: "That branch of the military art which embraces the details of the transport, quartering, and supply of troops in military operations." As the word is used in the following pages, its meaning is even broader. It embraces all military activities not included in the terms "strategy" and "tactics." In this sense logistics *includes procurement, storage, and distribution of equipment and supplies; transportation of troops and cargo by land, sea, and air; construction and maintenance of facilities; communication by wire, radio, and the mails; care of the sick and wounded; and the induction, classification, assignment, welfare, and separation of personnel.*¹³

Now this was a significant development for logistics. It occurred in one of the largest organizations ever assembled by man, and it contributed to victory in one of the largest wars ever engaged in by man. Since one usually does not argue with success, logistics was accepted in the postwar years as much

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more than moving and supplying armies—the concept was expanded to include construction, communication, medicine, and personnel. In 1948 a very slightly reworded version of the italicized part of the preceding quote appeared as the official JCS definition of logistics. However, it was not universally accepted by the Military Establishment. Presumably, the doctors, communicators, personnel managers, and others did not see themselves in quite the same way that the Army Service Forces did. Furthermore, one really cannot see any difference between that definition and one describing the entire field of military administration. In any event, attempts were made in the next few years to reword the definition so it would conform to actual military applications. The result was achieved in 1953 and has remained virtually unchanged since.

Logistics. The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations which deal with:

(a) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel;

(b) movement, evacuation, and hospitalization of personnel;

(c) acquisition or construction, maintenance, operation, and disposition of facilities; and,

(d) acquisition or furnishing of services.¹⁴

Thus, our exploration of logistics ends with a current definition. It is a long way from the original meaning of mathematical calculation and the later added meaning of lodging troops and ordering marches. Along the way,

military scholars like Jomini and Thorpe have claimed that logistics is a science, but for most of the time it was neglected or relegated to a series of tasks that, hopefully, somebody else would do. World War II brought logistics to center stage for military men.

Post-World War II Developments. Interestingly enough, those who have become involved with logistics, particularly those with an inclination toward military scholarship, have given less than enthusiastic support to the official definition. In whole or in part they have tended to ignore it. Their efforts have taken the form of intensive scholarly inquiry and practical organization experimenting, most of which began with the book *U.S. Naval Logistics in World War II* written by Duncan Ballantine and published in 1947 at about the same time as was the report of the Army Service Forces mentioned earlier.

Ballantine was a historian and was encouraged and supported by the Navy to record the history and lessons of naval logistics during the war. He saw logistics as a process in which: “. . . the raw warmaking capacity of the nation is translated into instruments of force ready to be employed in pursuit of strategic or tactical objectives. As such it is both an economic and military undertaking.”¹⁵ Using this as a beginning, we can briefly describe some of the post-World War II developments that have taken place before getting into a detailed description of a study of these same developments which resulted in a modern definition of the concept of military logistics.

Navy Developments. In 1949 the Navy established The George Washington University Logistics Research Project. As mentioned previously, the subject of logistics had been taught at the Naval War College as far back as 1888. Benefiting greatly from the results of the ongoing Logistics Research Project,

the War College was able to place new emphasis on the subject in its curriculum. Rear Adm. Henry E. Eccles participated in the research project and in the Naval War College educational program. He has been a key figure in the latter and has written three books on logistics as well as numerous articles. Using his own studies and research to build upon Ballantine's foundation, Eccles offered a perceptive definition of logistics in 1959: "*Logistics* is the provision of the physical means by which power is exercised by organized forces. In military terms, it is the creation and sustained support of combat forces and weapons. Its objective is maximum sustained combat effectiveness."¹⁶

Army Developments. The Army also encouraged historians to work under its auspices in World War II and allowed them unlimited access to its files both during and after the war. Many Army studies have been published, but the most notable were two volumes written by Leighton and Coakley and two by Ruppenthal which dealt with global logistics and European logistics, respectively.¹⁷ Their studies imply the same concept of logistics as was proposed by Ballantine. Leighton and Coakley observed in 1955 that, in spite of the official definition of logistics then published by the Joint Chiefs of Staff, there existed differing military interpretations of logistics. These were found in speeches and writings by members of the services and especially in organizational applications that varied widely from the official definition. They concluded that there was a:

... widespread uncertainty in the military profession itself as to precisely where logistics stops and something else begins. Evidently the term is still in process of rapid and healthy growth. Until it matures and settles down, we must accept it, perforce, in whatever

guise it appears—that is to say, with the specific shape, content, and emphasis it derives from its concrete environment.¹⁸

In the years since World War II, the Army created the Logistics Management Center at Fort Lee, Va., whose responsibilities range from academic to practical organizational applications of logistics. Army schools, particularly the Command and General Staff School at Fort Leavenworth, emphasize logistics in their curricula. The Army has also been a major contributor to the evolution of the modern concept of logistics.

Air Force Developments. The Air Force also sponsored logistics research in the postwar era. The Rand Corporation, established on an Air Force contract in 1948, organized a logistics research department in 1954. Rand research has helped the Air Force in its efforts to apply the concept of logistics in everyday operations.

On the academic level, the Air Force organized an Advanced Logistics Course in October 1955 at Wright-Patterson AFB, Ohio, in a residence program offered by the Air Force Institute of Technology. In cooperation with Ohio State University, this 6-month course was gradually improved and expanded into a 1-year curriculum which leads to the degree of Master of Science in Logistics Management. The degree has been fully accredited by the North Central Association of Colleges and Secondary Schools since 1963, and some 500 graduates now hold the degree. Thus the newest of our services has made its contribution to the store of logistics knowledge.

The Concept of Logistics in 1970. Obviously, the services have devoted a great deal of their resources during the past 25 years to the research and study of military logistics. Its importance as a function of war and as a primary organi-

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problem has been to translate the idea, the concept, of logistics into a usable framework so that it can be successfully applied to military organization.

Since World War II a great deal of effort has been expended by the military services on academic research, study, and practical application in order to define the scope of logistics. To many observers these efforts seem to have produced a myriad of conceptual interpretations of logistics, each of which has been constructed to meet the individual need at hand.

However, an alert observer notes that the differences are not so much conceptual as they are semantic. The year-long study reported in this article took notice of the fact that logistics is conceived at three different levels of purpose or function. They derive from the viewpoints of the military authorities who have studied and written about the subject. These three levels were defined as the social and economic purpose of logistics at the highest level; the system processes or steps through which the purpose is achieved at the second level; and the work-functions or organizational tasks that must be performed to make the system work form the third level of the definition of logistics. Once this key to understanding the relationship among the differing views of logistics had been discovered, the simple task of categorizing definitions and resolving semantic confusion, though time-consuming, was done with ease. The resulting definition makes sense because it reasons logically both inductively and deductively. Many of the logistics management problems that military organizations face today can be solved through a rational application of this concept.

Military Logistics: The social and economic function of Physical Supply and Physical Distribution that creates time and place value for military goods and services. As

a military organizational system, the purpose of logistics is accomplished through the processes of Requirements Determination, Acquisition, Distribution, and Conservation. The organizational work-functions or physical tasks that must be performed to accomplish the purpose of military logistics are Traffic Management, Supply, Maintenance, and Facilities Engineering.

There stands the concept of logistics as it has evolved through the past three centuries. Let us take advantage of our knowledge to improve military organizations so that we can more effectively and efficiently accomplish our national purpose.

BIOGRAPHIC SUMMARY



Lt. Col. Graham W. Rider graduated from West Point in 1952 and was commissioned in the U.S. Air Force. He served for several years as an avionics and munitions maintenance officer in both squadron and headquarters staff assignments. Subsequently, he attended the Air Force Institute of Technology, School of Systems and Logistics, and received his master of science degree in logistics management in 1966. After serving for a year on the faculty of that school, he was selected by the Air Force to study for the degree of doctor of business administration at Arizona State University. Having completed that degree in June of 1970, Lieutenant Colonel Rider is now an assistant professor of logistics management on the faculty of the Air Force Institute of Technology. He is a recipient of the U.S. Air Force Institute of Technology Logistic Merit Award and is a charter member of the Society of Logistics Engineers.

FOOTNOTES

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I don't know what the hell this "logistics" is that Marshall is always talking about, but I want some of it.

E.J. King: To a staff officer, 1942