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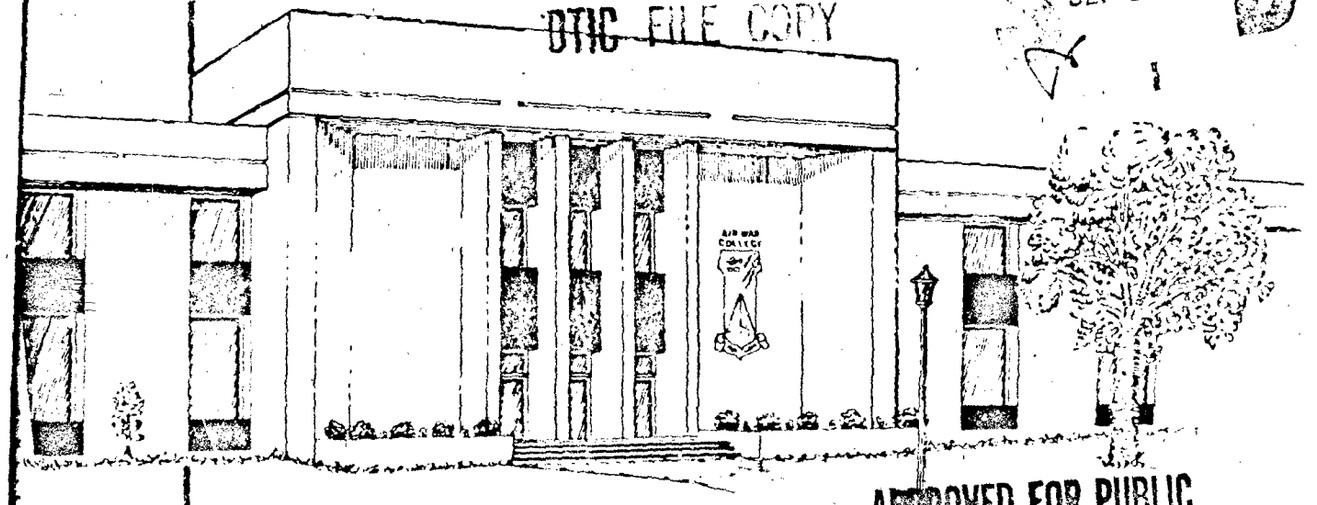
THE AIRLIFT DILEMMA:

AN UPDATE

By LIEUTENANT COLONEL EDWARD M. BULLARD



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The US, in order to protect its security, must be able to support its forces currently forward deployed as well as projecting other military forces into regions of the world where they do not exist. Time has become a critical factor because of the rapid mobility of modern armed forces and especially for the US because of its geographic isolation from much of the world. Transport by air becomes the only available method of movement during the &&& early stages of conflict. In order to satisfy that requirement, an airlift force structure must be capable of not only meeting the time constraints, but be capable of carrying a combat unit from its origin to its employment area. The current airlift force does not have this capability. After examining doctrinal and strategic principles, this report recommends a force structure which responds to our national military strategy. First, it recommends modernization of the tactical airlift force through purchase of newer model C-130 aircraft from a production line which is still oper. Second,it recommends the purchase of a long-range C-17 type aircraft which, through its method of direct delivery, can avoid the traditional hub and spoke transportation system and save precious reaction time.

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THE AIRLIFT DILEMMA:

AN UPDATE

by

Edward M. Bullard

Lieutenant Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

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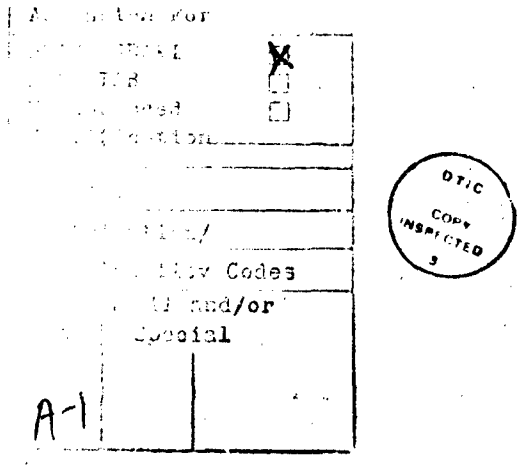

AIR WAR COLLEGE RESEARCH REPORT ABSTRACT

TITLE: The Airlift Dilemma: An Update

AUTHOR: Edward M. Bullard, Lieutenant Colonel, USAF

The United States, in order to protect its vital security interests, must be able to support its forces currently forward deployed as well as projecting other military forces into regions of the world where they do not exist. Time has become a critical factor because of the rapid mobility of modern armed forces and especially for the United States because of its geographic isolation from much of the world. Transport by air becomes the only available method of movement during the early stages of conflict. In order to satisfy that requirement, an airlift force structure must be capable of not only meeting the time constraints, but be capable of carrying a combat unit from its origin to its employment area. The current airlift force does not have this capability.

After examining doctrinal and strategic principles, this report recommends a force structure which responds to our national military strategy. First, it recommends modernization of the tactical airlift force through purchase of newer model C-130 aircraft from a production line which is still open. Second, it recommends the purchase of a long-range C-17 type aircraft which, through its method of direct delivery, can avoid the traditional hub and spoke transportation system and save precious reaction time.

During a time when the Defense budget must compete with other federal programs for scarce resources, careful conceptual thought is required to ensure that the proposed new weapon systems can execute national military strategy.

BIOGRAPHICAL SKETCH

Lieutenant Colonel Edward M. Bullard (BA University of Oregon; MPS Auburn University) has spent nearly his entire Air Force career in airlift plans, policies and operations. He has commanded a military airlift squadron and served at both Headquarters, Military Airlift Command and Headquarters, United States Air Force. He is a graduate of the Air Command and Staff College where he co-authored the initial curriculum development plan for the Airlift Operations' School. Colonel Bullard is a graduate of Squadron Officer School, a distinguished graduate of Air Command and Staff college, and a graduate of Air War College, class of 1985.

FOREWARD

Begun as a major research effort over two years ago, this paper attempts to establish the priorities in force structure acquisition--specifically as it relates to airlift.

In the aftermath of the first major airlift acquisition decision in 20 years, many including this author, were concerned over the rationale and decision making process which arrived at the acquisition decision. It appeared too little attention was being paid to the proper relationship of national military strategy, doctrine and force structure. Over the past two years, the airlift community, specifically the Military Airlift Command, has attempted through the Airlift Master Plan and the upcoming Worldwide Intratheater Mobility Study to properly focus upon this relationship. However, the initial concerns of doctrine and strategy and their proper relationship remain valid and worthy of continued discussion and debate.

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CHAPTER I

INTRODUCTION

"We have learned and must not forget that from now on, air transport is an essential of airpower, in fact, of all national power."

General H. H. "Hap" Arnold (1945)

In the aftermath of World War II, General Arnold, then Chief of the Army Air Corps, recognized the role that airlift would play in the future national security strategy of the United States. Today, the United States has progressed from a post-World War II strategy which relied almost exclusively on nuclear deterrence to one which emphasizes conventional deterrence as well, with the corresponding capability to deploy those conventional forces worldwide.

While nuclear war has been successfully deterred for over 35 years, conventional war has been waged nearly continuously in some part of the world. The United States has been directly engaged in two major conflicts in Asia and continues to base significant forces in Europe and Korea. The impotency of nuclear weapons in deterring conventional warfare is evident in not only the Korean and Vietnam conflicts, but in the continuing turmoil in Latin America, Africa, and Southwest and Southeast Asia.

For economic and political reasons, the United States can no longer maintain a permanent military presence throughout all areas of the world even in those areas where her national security interests may rest. However, to avoid abrogating vital interests in those regions, forces which are both sufficient and credible must be available to respond at precisely the critical point and place in the event we attempt to control the conflict. For those regions where forces are forward deployed, sustained and rapid

movement of reinforcements and supplies is likewise critical. It is through a perception of strength by friends and foes alike that we can influence, deter, or resolve crises favorable to the United States. It is this deterrence through perception, rather than actual engagement, which should be our goal. Once military forces are engaged it becomes increasingly difficult to control conflict especially where powerful states are involved.

To create this proper perception, the United States must have available two key elements: (1) sufficient conventional forces, (2) the means to deploy them. One without the other lacks credibility and is potentially dangerous. There is much debate today over US military forces and their capability to preserve national security. This is a debate which is healthy in an open society, for it presents the vital issues for public discussion. It is through this public debate that consensus is built and policies are approved and supported. A critical aspect of this debate revolves around the required mobility assets necessary to implement current strategy. This paper then will focus on that mobility segment, specifically addressing a desired force structure for airlift forces.

The airlift force of the United States is indeed formidable. At present, there are 70 C-5As, 234 C-141s, and 520 C-130s.[1] When augmented by the Civil Reserve Air Fleet (CRAF) with its 391 commercial air freighters, vast quantities of men and materiel can be moved great distances.[2]

By comparison, the Soviet Union can field a fleet of 600 aircraft, but with lesser capability for long-range lift. This military fleet can be readily augmented with 1300 medium and long range passenger aircraft of Aeroflot as well as 1250 transports from the other military services.[3] Geographic realities present the United States with a greater need or

requirement vis á vis the Soviet Union. From Europe to Southwest Asia and the Far East, the USSR has an established land transportation infrastructure. Conversely, the United States must transit vast distances to those regions either via air or sea.

In recent years, acutely aware of this reality, the Department of Defense has embarked on an extensive program of enhancements and acquisitions for mobility assets. For airlift, 50 C-5Bs and 44 KC-10 tanker/cargo aircraft have been authorized. In addition, the Department has proceeded with a concurrent program to ensure existing forces have the required support to execute their assigned mission.[4] With all this capability and all the planned enhancements, it would seem airlift is well prepared to meet the mobility challenges of today and tomorrow. What then is the dilemma? After spending billions of dollars on this force modernization, have we really procured the proper capability or have we succumbed to political compromise? Are we building a modern airlift force capability both as a credible conventional deterrent and warfighting force or are we lulling ourselves into a false sense of national security? The dilemma is we are ignoring our strategy and our doctrine in the rush to improve airlift. We are not building our force structure with the proper mix of capability which is absolutely vital to execute our strategy.

This paper then will begin, as it should, with a discussion on doctrine and strategy. What are the doctrinal lessons which should establish a base for implementing strategy? What is the theory that has been tempered by time? "Theory without the leavening of experience, lacks substance and foundation; experience without theory lacks an adequate frame of reference to accommodate future changes that will surely come."[5]

A brief look at some classical and theoretical strategists will provide, like doctrine, a foundation from which to build upon. Since national strategy establishes goals and priorities, it should be defined in the current context. Military strategy to meet the goals established by national security strategy will then be examined. Finally, how does airlift meld into this strategy and what can airlift do that no alternate form of mobility can.

Chapter II will briefly look at previous analyses and their conclusions. Only a select few will be highlighted since airlift studies over the last decade have proliferated inversely proportional to the adoption of their recommendations. Next, the paper will explore current policy towards airlift. Current policy recognizes the need, but falls short of meeting the requirement. Since the procurement decision was announced, pitched political battles have been waged in Congress while airlift-related articles have received wide circulation. There are alternatives and several of the more credible ones will be offered for comparison. Finally, in the last chapter, some conclusions for force structure and priorities will be recommended as a viable alternative to current policy.

CHAPTER II

DOCTRINE AND STRATEGY: THE REQUIREMENT FOR AIRLIFT

The paper will not explore the requirement for airlift from a quantitative perspective, but rather from the basic precepts of military doctrine and strategy. While the exact numbers of airlift vehicles are essential in sizing the force, they are a secondary consideration in selecting the type of force. Without knowing what it is you need, you can't begin to count what it is you want. The converse is the situation today. An acquisition decision based on a fixed requirement, stated in ton-miles, was made without a full appreciation of the capabilities necessary in an airlift force.[1] The rush to quantify a requirement and provide new aircraft at the earliest possible time overruled a longer, more rational approach and prevented a panoramic view of the true airlift shortfall. A study of Air Force doctrine coupled with classical and contemporary strategy will provide a foundation for building an airlift force that until now has been insufficient to satisfy current national military strategy.

As stated in JCS Publication 1, doctrine is defined as: "fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application."[2] Other definitions incorporate the same theme. Doctrine represents a set of agreed upon principles and practices that are fundamental and authoritative. It also represents a shared belief that establishes cohesiveness within a group or organization and provides direction for group activities.[3] At the very heart of warfare lies doctrine. It represents the central beliefs for waging war in

order to achieve victory. According to General Curtis E. LeMay, "Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is the building material for strategy. It is fundamental to sound judgment."[4]

The formal definition of doctrine and supporting variations encompass certain key ideas. Doctrine is fundamental. It is at the core of the employment of military forces. It is not controversial but rather accepted. It is a set of principles which all agree to and subscribe to. However, this is not to imply the principles are cast in stone. The forces which change society and the environment will tug and pull at doctrinal precepts. It is therefore incumbent upon the shapers of doctrine to recognize change and adjust accordingly. Doctrine should not be revolutionary but rather evolutionary, otherwise it no longer can be considered fundamental.

There are those who would argue that doctrine requires radical and innovative updating to maximize new aircraft and capabilities.[5] However, on the contrary, this is the opposite of pure doctrinal development. It ought to be the doctrine which drives new aircraft and capabilities. If technology is allowed to dictate doctrine, then, because of the current quantum leaps in technology, doctrine would find itself in a constant push-pull relationship without the thread of continuity which is at the cornerstone of doctrine. Basic aerospace doctrine subscribes to this priority: ". . . the procurement of weapon systems must primarily provide the capability to execute current doctrine."[6]

Doctrine, therefore, is at the beginning. It follows then that Air Force doctrine is at the beginning in any analysis of airlift force structure. Fundamental Air Force doctrine emphasizes 12 principles of war. They are: objective, offensive, surprise, security, mass, economy of forces, maneuver, timing and tempo, unity of command, simplicity, logistics, and cohesion.[7] They are interrelated--not mutually exclusive. They require judicious application based on the flow of battle and unique circumstances of the situation. These principles, like doctrine, are fundamental yet the list may vary according to author. One principle of particular contemporary interest is maneuver.

Maneuver is the key to Air Force operations and for airlift is the "raison d'etre" for its existence. It is airlift which gives ground and air combat units the mobility to be decisive in warfare. It gives the option to military commanders to place the proper forces at the proper location at the proper time as embodied in the principles of maintaining the offensive, mass, economy of force, surprise, and timing and tempo.

> Maneuver is required to maintain the initiative, dictate the terms of the engagement, and to conduct offensive operations. The use of maneuver allows commanders to position their forces in places and at times that surprise the enemy, so that the enemy forces are unable to counter to respond effectively. To be effective, maneuver requires precise execution and timing, concentration of force and adequate logistical support.[8]

If there is a connective principle which provides the basis for the other principles, then maneuver is that principle.

Airlift's contribution to maneuver is defined in its basic mission:

> . . . to airlift personnel and materiel in support of military objectives for two missions: strategic and tactical. Strategic airlift (intertheater) is sustained air transportation between operational areas, or between the continental United States and overseas areas. Tactical airlift (intratheater) is deployment, airborne assault, air evacuation and air supply within an operational area.[9]

The essential characteristics of strategic airlift are mobility, range and speed, flexibility and responsiveness.[10] The essential characteristics of tactical airlift include those for strategic as well as the capability to operate from assault strips and austere landing areas and conduct operations by various delivery modes into all types of terrain.[11] Strategic airlift is inherently flexible and mobile with the capability to perform independently of other forces.[12] Tactical airlift's governing criteria is its responsiveness to a fluid requirement.[13]

The essence of airlift doctrine is the emphasis on maneuver, flexibility and responsiveness. Its ability to concentrate forces at the decisive point in battle through its speed and timeliness makes it an essential ingredient on today's maneuver battlefield.

The formal definitions of airlift divide responsibilities between strategic and tactical. More contemporary definitions substitute the terms intertheater and intratheater. These classifications may often obscure true airlift capability as it should be viewed as an unbroken circle where a continuous stream of logistical support is supplied from origin to user and return. The various aircraft have different and unique capabilities which allow them to perform certain tasks better than other tasks. However, the essence of air mobility lies in one airlift system capable of traversing the entire circumference of the circle. Without the fully complementary capabilities of a complete airlift force, the circle is broken and the objective of rapid mobility of combat forces is not achieved.

Military strategy is the other classical theory which, like doctrine, must be grasped as a precursor to developing an airlift force structure. B. H. Liddell Hart defined military strategy as: "the

art of distributing and applying military means to fulfill the ends of policy."[14] Hart makes the important connection between strategy and policy. The attainment of military goals is not the ultimate objective. Those military goals must serve the broader national policy objectives. The point here may be simple but is absolutely essential in understanding the relationship of military strategy to national goals.

Sun Tzu, like Hart, linked national strategy to military strategy with the former needing to be fully defined before the latter could be addressed. Sun Tzu, in designing general strategies on the conduct of war, placed primary emphasis on the quality of his troops over numerical strength.[15] Morale and their ability to fight were of more consequence than sheer numbers. Sun Tzu's classical thoughts could well be used in today's argument over quantity versus quality. He recognized the value in the perception of military force and the capability to use it. "The skillful strategist should be able to subdue the enemy's army without engaging it, to take his cities without laying siege to them and to overthrow his state without bloodying swords."[16] Doesn't this philosophy have merit today? A strong credible force with the ability to respond rapidly and decisively can influence events without engaging in conflict. Sun Tzu's philosophy embraced deception as well, but certainly the perception of strength was a vital ingredient. The value of doctrine was not overlooked by Sun Tzu either as he considered it one of the five fundamental factors, and in his discussion on doctrine logistics was a key element.[17]

Clausewitz reinforced much of Sun Tzu's philosophy on military logistics. The first of his principles of attack was keeping the army

constantly in supply of arms. He saw lines of communication as "great channels of life," through which supplies flowed, but also through which the army could retreat.[18] On the causes of victory, Clausewitz cited the first as to follow up a great and decisive object with energy and perseverance.[19] Today we might use the term sustainability.

The review of strategic theory and classical thought is only practical if contemporary issues can be seen more clearly through their study. Hart, Sun Tzu and Clausewitz do not exhaust the list of strategic thinkers, but their consistency in agreement as to the relationship of national and military strategy and the emphasis by Sun Tzu and Clausewitz on logistics is meaningful to the airlift debate today.

Military forces must be strong and credible, which means they must have capability and mobility. Military strategy must be linked to national strategy for it is national strategy which establishes goals and objectives. Once engaged, military forces must have sufficient staying power (sustainability) and transportation assets to ensure victory is achieved.

Against this backdrop of formal organizational doctrine and classical strategy, where does one begin to formulate a plan for airlift force structure? As the argument that has been developed would dictate, the starting point is national goals and strategies.

During a speech at Georgetown University in May 1982, William P. Clark, then National Security Advisor to the President, outlined in broad perspective these goals:

> Purpose of strategies should be to preserve our institutions of freedom and democracy, to protect our citizens, promote their economic well-being and to foster an international order supportive of these institutions and principles. . . .

> Global planning is a necessity. This does not mean we must have the capability to successfully engage Soviet forces simultaneously on all fronts. We can't. What is does mean is that we must procure balanced forces and establish priorities for sequential operations to ensure that military power would be applied in the most effective way.[20]

Implicit in Clark's statement is the ability to respond across the spectrum of conflict with appropriate military force. Those forces, short of strategic assets, require mobility assets to move them. Those mobility assets include airlift, sealift and prepositioning supplies in selected theaters.[21]

Supportive of these goals, Secretary of Defense Weinberger outlined the defense (military) strategy necessary to achieve them. The defense strategy of the United States incorporates three main principles: (1), the strategy is defensive, (2) the strategy is deterrence, (3) should deterrence fail that we will restore peace on terms favorable to the United States. The policies necessary to execute the strategy include a collective defense by our allies, forward deployments of combat forces and a flexible force structure which allows the United States to respond quickly to unforeseen contingencies in areas of the world where vital interests lay.[22] Explicit in the latter two policies are the means to support, reinforce and project military forces. In summary, the basic military strategy is deterrence and one in which US military forces must be designed to meet both regional and global demands.

However, as stated by the Joint Chiefs of Staff, "without mobility, combat forces cannot be brought to bear at the point of attack soon enough or with sufficient staying power to influence the outcome favorably."[23] These mobility forces must possess the flexibility to operate in all areas of the world. Responsiveness to changing needs of combat coupled with a

capability to load and offload military equipment with a minimum of local support must be design characteristics of those forces.[24]

The airlift leg of this mobility "triad" will be of primary importance during the initial phases of a major crisis. Before sealift can be effective and to position troops with their prepositioned equipment, airlift will be the key--the only key in providing sufficient forces. During the first 30 days of a crisis, over 90 percent of the combat forces will be delivered by air.[25]

With regard to airlift, the direction is clear in structuring current and future forces. Those forces must be flexible and responsive with the capability to employ and sustain combat forces worldwide as close to the combat objective area as possible. They must be consistent with the inherent characteristics of air power as espoused in Air Force doctrine and must also follow the precepts of the time-proven classical strategists.

The design of that force structure was hotly debated during the Fiscal Year (FY) 83 Budget process. The debate centered on how best to satisfy a numerical requirement of ton-miles as defined in the Congressionally Mandated Mobility Study (CMMS). This requirement--the ability to quantify--has always been difficult to agree upon. As John Shea, the former Assistant Deputy Chief of Staff for Plans, Headquarters, Military Airlift Command, said: "we in the military experience a continuing problem relating to the requirement for airlift. We never seem to have enough airlift to satisfy the wartime requirement."[26] The answer to John Shea's dilemma lies partly in the relationship of requirement to capability. The requirement is defined by the combat commander. As more or less capability is applied, the requirement is adjusted proportionally. Therefore, war

plans are developed on what we can do rather than what we want to do.[27] As more capability is provided, the greater the requirement, for if a combat commander can receive his forces sooner, the more likely he will ask for them. Obviously, without a more rational method to develop the requirement, the desired capability can never be defined.

To overcome this deficiency, the CMMS attempted to quantify the airlift requirement by taking into consideration all elements of the mobility triad and prioritizing movements. Based largely on this study, a program of enhancement and procurement to redress the shortfall in airlift forces exists. The dilemma is that the solution has been based largely on the quantification criteria without sufficient consideration of national military strategy and doctrine. We will look at this more closely in the next chapter.

CHAPTER III

PREVIOUS ANALYSES

Nearly from the inception of the Air Force, the Army has been concerned with the Air Force's ability to support worldwide Army requirements--specifically tactical transport.[1] In 1957, Secretary of Defense Wilson attempted to define the requirements for Army aviation so as to resolve this ongoing controversy. The Army was allowed to perform liaison, reconnaissance, command and control, fire adjustment, and similar missions within a battle area. The battle area was defined as 100 miles each way from the Forward Edge of the Battle Area (FEBA). Additionally, Army aircraft were restricted to specific gross weights (10,000 pounds empty for helicopters and 5,000 pounds empty for other aircraft).[2] As a manifestation of its concern, the Army obtained a waiver to Wilson's restrictions and purchased the C-7 Caribou. Although these aircraft were later transferred, for the most part to the Air Force, continuing dissatisfaction with the Air Force's ability to support Army requirements was still evident.[3]

Not until 1974, when the Secretary of Defense issued a Program Decision Memorandum calling for the consolidation of strategic and tactical airlift assets, did the Air Force enjoy the benefits of unity of centralized airlift command.[4] Until this date, airlift command had been fragmented between US-based and overseas major air commands. A major tenet of early air power proponents had been finally reached for airlift--centralization of command. Therefore, it has been a relatively recent awakening to the entire dilemma from organization to capability which prevented a coherent policy towards airlift. There appears ample reason to believe that without the

unity in organization prior to 1974, perceptions and solutions were too partioned to allow agreement.

Since consolidation of airlift, there has been a greater appreciation of the synergistic effect of long and short-range airlift.

> The ability for the strategic airlift element of rapidly deploying military forces under the various contingency plans is of little value if the military does not have the tactical airlift capability to rapidly distribute the military equipment and supplies down to the user units within a theater of operations.[5]

This conclusion by the Armed Services Committee in the House of Representatives is one of the first official pronouncements which clearly understood the essence of airlift--that it is one system which is incomplete without the capability to deliver equipment all the way to the user. The committee also recognized the dissimilarity in grasping the requirement for the two types of airlift.

> The upper limits of estimated requirements for strategic airlift can be reasonably calculated for any given strategy: however, a somewhat different problem exists when estimating requirements for tactical airlift. The number of aircraft in a tactical airlift force and the individual performance characteristics of the aircraft are very sensitive to the circumstances faced in a postulated situation.[6]

In other words, tactical airlift forces must be responsive. Although exact numbers are difficult to determine, whatever capability exists must satisfy user requirements swiftly and efficiently. Finally, the committee noted the aging nature of tactical airlift as compared to strategic airlift which suffered the same creeping obsolescence in the 1960s.[7] Unlike the strategic airlift modernization program however, no credible modernization program has begun nor is programmed. The airlift shortfall cannot be accused of insufficient study. Over 150 studies, 17 in the last seven years, have all concluded there is a shortage of airlift.[8]

The Army AMST Study of 1977, among other things, established a ratio of outsize requirement to oversize for intratheater airlift.[9] This ratio was 10 to 20 percent dependent on the scenario. As will be seen later in the Congressionally Mandated Mobility Study, this ratio approximates the intertheater airlift requirement.[10]

The Congressional Budget Office (CBO) in 1979 published a report entitled US Airlift Forces: Enhancement Alternatives for NATO and Non-NATO Contingencies. They concluded:

> Requirements for tactical airlift in a limited contingency could potentially justify procurement of an advanced tactical transport such as the AMST. Tactical airlift could be particularly valuable in non-European areas which lack the sophisticated ground transportation system.[11]

The CBO argues the point correctly that tactical airlift requirements should go beyond the NATO scenario.

> The primary advantage of airlift is its ability to respond to a broad range of circumstances in virtually any location. . . . Indeed if American forces were required to assist in the defense of South Korea, or were deployed to the Middle East or Persian Gulf areas to aid a friendly country, airlift forces would be indispensable.[12]

The CBO's identification of the inherent responsiveness of airlift is, of course, consistent with the central argument of this paper. For future force modernization, the CBO recommended an airlift enhancement program which must include outsize capability to significantly improve the closure times for heavy Army divisions.[13]

Saber-Size Army was a 1981 study conducted by USAF Studies and Analysis to determine the impact of the Army equipment modernization program. Their analysis concluded that by 1986 the Army would get larger and heavier. Using 1978 as a base line, there would be a 115 percent increase in outsize

and a 22 percent increase in weight. The results of this study argue for an expanded airlift force both in numbers and in types of capabilities.[14]

In 1981, the General Accounting Office echoed the CBO's findings for improved tactical airlift. "Intratheater airlift movement of passengers and cargo within combat theaters by air provides the capability to move quickly even between points separated by impassable terrain." However, without offering concrete recommendations, they criticized the Department of Defense for their inability to quantify the requirement.[15]

Thus far, all of the studies and analysis understood the need for tactical airlift but because the requirement was not quantifiable, no specific program could be agreed upon. A recent analysis of the integration of airlift into the Army's new High Tech Light Division (HTLD) seeks to exploit the doctrinal principal of maneuver through rapid mobility.

> Superior mobility will allow units of the HTLD to gain tactical superiority by outflanking the enemy, by seizing the key terrain before the enemy can reach it and by raiding the enemy's rear area to confuse and reduce effectiveness.[16]

The implications derived from this study would argue for airlift aircraft which can operate in a forward battle area. This means they must be flexible--capable of multiple methods of delivery. They must have short/austere field capabilities--to land where the Army is. They must be survivable--rugged design with active and passive deception capability.

The final analytical study and the one which has enjoyed the most credibility is the Congressionally Mandated Mobility Study (CMMS). It has become the basis for the future airlift force structure. Because this study quantified the dramatic shortfalls in strategic or intertheater airlift, quick and rapid decisions were made to redress the shortfall. Since the bulk of the requirement is generated by the Army and comprises significant

amounts of outsize equipment, that particular aspect has received the widest attention. The study concluded the intertheater outsize requirement to be between 17 to 27 percent.[17] Looking back to the Army AMST Study, there was an intratheater outsize requirement of between 10 to 20 percent. Although these numbers are approximate, a certain relationship may be derived. This relationship is established not to determine how many aircraft are needed but rather the capabilities required of the existing and enhanced fleet. For example, if the total (inter- and intratheater) outsize requirement is roughly 25 percent, then the number of outsize aircraft would be that percentage of the total fleet (providing the total fleet equalled the total requirement). Stated another way, there is not a substantiated requirement to have the entire airlift fleet outsize capable.

Following the CMMS, the Military Airlift Command prepared for the Air Staff an acquisition and improvement plan to satisfy the goals of the CMMS. Known as the USAF Airlift Master Plan, this document details the "how do we get there from here." While much of the discussion centers on tonnage and numbers, there is a glimmer of hope. "A viable force projection strategy demands forward thinking plans to maintain the correct quantity and mix of airlift aircraft."[18]

In looking past this decade, Air Force 2000 supplemented the previousiy discussed desired capabilities of airlift aircraft by reinforcing a desired characteristic known as direct delivery.

> Airlift is key element in executing US military strategy. To optimize overall effectiveness, door-to-door force projection service must be provided in the 21st century. Airlift must move combat units from peacetime bases, both to the CONUS and within the theater, directly to their combat operating locations. The other mobility modes, surface lift and prepositioning, although necessary, are time-consuming, manpower intensive, and require support that may not be responsive to

> scenario demand. Also, these other modes are tied to peripheral port facilities or fixed storage sites that may not be available to the commander. Direct delivery to forward bases of outsize, oversize and bulk equipment is so vitally important that a C-17 type aircraft in large numbers will be a clear requirement by the year 2000.[19]

This new concept of direct delivery is a valuable tactic heretofore not available by large aircraft. It will not replace the tactical/intratheater requirement altogether but will be of invaluable assistance in responding to the overall airlift mission.

Colonel Vincent Hughes (USAF, Ret.), who was Deputy Director of the C-X Task Force, drew several lessons in the pursuit of new airlift aircraft. Two are germane to this discussion. First, airlift analyses can often be misleading because they only measure quantitative factors (i.e., number of ton miles) and do not address qualitative factors (total airlift capability). Second, to put it bluntly, tactical airlift needs are several priority rungs below strategic airlift requirements.[20]

Where do we go from here? Most of the aforementioned airlift studies concentrated on tactical airlift, yet no improvements are expected in the near term. The CMMS concentrated on strategic airlift, quantifying the requirement and unlike the tactical airlift studies, improvements are under way. However, there is not a comprehensive program--one which truly looks at the entire airlift dilemma.

CHAPTER IV

CURRENT POLICY AND FUTURE FORCE STRUCTURE

Mobility has not always enjoyed the serious attention that it does today. Indeed, the awakening to the critical shortfall has been a recent event. The FY 1980 Military Posture Statement devoted less than a full column to all of mobility of which airlift is only a part.[1] The pronouncements on strategic and tactical airlift shortfalls were general without substantive emphasis. The statement did, however, surface a deficiency which today's force structure still lacks without a meaningful near-term remedy. The statement recognized that tactical airlift can carry only about one-third of the basic combat equipment items found in an Army division.[2] This conclusion by itself however, created little impetus to redress the imbalance. Although the C-X program was under way, the immediate concern was on the strategic/intertheater characteristics of the airplane, with its tactical/intratheater role of secondary importance.

Beginning in FY 1981, no doubt largely due to the continuing crises in the Middle East and Southwest Asia, there occured a major shift in emphasis in order to come to grips with the mobility shortfall. According to the Joint Chiefs of Staff Posture Statement, ". . . The US should have the capability to deploy a military presence rapidly and efficiently into areas of the world which lie outside either bloc."[3] There was this recognition that areas of the world which are not considered to be aligned with either the US or Soviet Union could be of vital interest to US national security. Without the concentration of force such as exists in Europe or Korea, the capability of committing forces into particular regions is

directly proportional to the capability of mobility assets. Additionally, the posture statement emphasized the importance of modernizing the short-haul (tactical) force noting the aging nature of existing aircraft.

> There is also a need to modernize intratheater airlift forces. The current inventory of C-130, C-123, and C-7 aircraft has performed well in the past, but some of these aircraft will begin reaching the end of their service life in the early 1980s. In addition, they cannot accommodate all large Army equipment.[4]

As this evolutionary awakening on mobility proceeded to FY 1982, stronger and more definitive statements on the requirement for airlift were made.

> The evolution of modernized heavier weapon systems and the recent crisis in Southwest Asia have brought more clearly into focus the need for a new airlift aircraft that will meet the needs of simultaneity. . . . Our long term goal is to be able to support simultaneously full-scale deployments to Europe and to other potential trouble spots. We would wish to meet the intertheater and intratheater demands of such a dual contingency and we plan to make substantial progress toward this demanding and rather elastic goal by the mid 1980s.[5]

In NATO, airlift is emphasized because of its flexibility. In employing the Rapid Deployment Force, rapid response is the key to successful operations.[6]

By 1983, there was no longer any question by senior policymakers on the importance of mobility.

> The defense policy of the US must remain strictly defensive. This stance has been fundamental to US national strategy since World War II, indeed even before then. From this premise it flows that our military forces must be prepared to react after the enemy has seized the first initiative and react so strongly that our counter attacks will inflict an unacceptably high cost on the enemy.[7]

Clearly, this policy statement argues in favor of the mobility assets for the counter attack after the first enemy initiative. For its part, airlift is fast, flexible and sometimes the only option available in the early stages of a conflict. Because airlift may be the only option and the key is a quick and strong response, then airlift must be the cornerstone of this

reactive strategy. The requirement is high. Within ten days, NATO must be reinforced with six Army divisions, one Marine amphibious brigade and 60 tactical fighter squadrons. For a Southwest Asia scenario, the light ground and air combat units necessary to occupy key positions and provide air defense must be deployed in about a week. Compounding this requirement is the necessity in the long term to meet the demands of a worldwide war including concurrent reinforcement of Europe, and deployment to Southwest Asia and support in other areas of potential conflict.[8]

Reinforcing previous years' commitments to mobility, the Annual Report to Congress Fiscal Year 1984 emphasized the deterrent qualities of mobility.

> We must be able to move our combat and support forces rapidly with sufficient equipment and supplies to establish a solid military presence at distant locations where our interests are threatened. With that capability, we can make military action by opposing forces less likely and may decrease the force size should deterrence fail. In peacetime, a proven capability for rapid deployment demonstrates a firm resolve to protect our interests and underwrites our commitment to friends and allies.[9]

By 1985, the evolution of the importance of airlift is complete, airlift has become the key to our rapid deployment strategy.

> Airlift, our most flexible and rapid force-projection resource, would play a vital role in a wide range of deployments. In regions such as Southwest Asia (SWA), where we maintain only a limited military presence in peacetime, airlift would deliver the initial increment of combat forces. These forces--comprising tactical air, air defense, and light ground units--would be needed to establish a foothold and secure an area, including ports and airfields for the arrival of follow-on forces. For deployments to regions such as Western Europe, where we station forces in peacetime, airlift is the only transportation mode that can satisfy our rapid-reinforcement objectives.[10]

Current DoD policy is reacting dramatically to the urgency of the situation. However, the failure to grasp the entire mobility issue is evident in the series of enhancements and acquisitions chosen to provide a

short and long-term solution. While the Secretary of the Air Force and the Chief of Staff testified to Congress that mobility forces must be capable of carrying out the largest airlift of men, equipment and supplies in history, current policy places primary emphasis only on the inadequacy of long-range lift.[11] One explanation for this narrow focus on long-range airlift is the inability to quantify the short range or intratheater requirement. Consequently, policy is based on a known, rational requirement and those requirements which cannot be fully defined statistically are avoided. Unfortunately, this perspective continues to divide airlift into its parts without the appreciation for the synergism of the airlift system. Unless the men, equipment and supplies are delivered to the combat area, only a marginal utility will be achieved by transporting them to the general theater of operations.

As has been mentioned, the current DoD and Air Force program to solve the mobility shortfall is comprised of two main elements. They are enhancements to current airlift forces and the acquisition of new weapon systems.

The first step is, of course, to ensure existing forces have the capability necessary to perform the mission to which they are assigned. To accomplish this, the Air Force will improve utilization rates, continue the C-5A wing modification, expand aerial port capacity and improve materiel handling equipment.[12] This element of the program invokes little controversy for it correctly establishes the priority of improving current forces before acquiring new systems.

The debate over the second phase or acquisition program has stirred the most debate. The rationale or requirement for new aircraft was founded

largely on the results of the CMMS. Based on forces that are programmed to exist in 1986, the study concluded a substantial increase in ton-miles would be required in concert with improved sealift and prepositioning.[13] Additionally, the CMMS noted that in Southwest Asia the demand for intratheater airlift would increase substantially because of the limited road network; thus the ability to move outsize cargo into austere airfields would show considerable benefit.[14] Indeed, the Ad Hoc Airlift Enhancement Committee supported the CMMS findings by concluding that recent studies have pointed to a lack of outsize and intratheater airlift shortfall on the order of 100 C-130 equivalents in Europe alone.[15]

The seriousness of this intratheater airlift dilemma notwithstanding, the solution selected placed the entire emphasis of the airlift shortfall on the strategic or intertheater segment.

> Primary emphasis is given to near-term airlift shortfalls by producing 44 KC-10s and 50 C-5Bs. The C-5B was selected because production deliveries, in light of increased funding, could be made earlier than under the C-17 program. The C-5B schedule calls for first delivery in the third quarter of fiscal year 1985 with the last aircraft being delivered in the fourth quarter of FY 1989.[16]

It is also evident that budgetary considerations drove the ultimate decision by offering a short-term option that was immediately attractive but postponed again the long-term solution. General Lew Allen's explanation concluded that the C-5B was bought not because it was a better airplane, since the C-17 has greater military utility, lower personnel requirements, lower operating costs and more potential for the replacement of aging C-130s and C-141s, but because it could be procured sooner. General Allen also concluded that outsize intratheater airlift must still be addressed, for the C-5B is not a likely candidate for these purposes.[17]

The rush to get "rubber on the ramp" did not buy us the best capability for the dollar. Since the C-17 is not yet under production, the short term fix with the C-5B may be our last airlifter of the century. Increasing budgets and deficits will necessitate reduction in major systems acquisitions, and the C-17 is most definitely a major system.

CHAPTER V

ALTERNATIVES

Decisions once made are easy to criticize--especially those involving new weapon systems. More than ever before, competing priorities both within the Department of Defense and the entire federal budget system argue for alternative forms of defense and government services. Public accountability demands that funds spent for defense, especially new programs, can withstand a rigorous analysis and ultimately provide the most cost-effective solution.

Airlift enhancements and acquisitions are no exception. Without altering our national security goals, there appear to be six broad options available in structuring the airlift force. The underlying assumption is however, that our national goals are valid and current military strategy is sound.

First, the airlift force could remain constant or be even allowed to atrophy. No matter how much airlift is purchased, sealift is the key to long and sustained movement of men and materiel. A review of the Israeli resupply in 1973 demonstrates this relationship. Of the roughly 85,000 tons delivered, over 63,000 tons (74 percent) was delivered by sea. However, prior to the written ceasefire, 66 percent of the resupply was accomplished by air as the hostilities lasted only 35 days.[1] Depending on the geographical area of conflict, the ocean transit time will either be greater or less but roughly 30 days can be used as a point in time where sealift can begin to be effective.

The gap in delivery time inherent in ocean transit can be overcome through some active and passive measures. Since airlift is only needed in large quantities until sealift can be effective, one need only substitute that period of time through increased warning and increased risk. More reliance on intelligence and the commitment to rely on warning time is conceivable. Warfare is based on risk. The amount of risk a commander is willing to assume reduces the requirement for military forces. For mobility, this means a lessening of the speed of reinforcement or force projection.

Additionally, a greater partnership between the civilian and military sectors through such a program as the Civil Reserve Air Fleet (CRAF) reduces the need for large military airlift forces organic to the Air Force. This option is most attractive to those who seek a low-cost solution. It is attractive from a balance sheet perspective but ignores the fundamental benefits derived from air power--flexibility and responsiveness. Additionally, increased reliance on warning time is potentially dangerous if there is not a concurrent commitment to react to warning and begin the movement of forces and supplies. An airlift force designed around these qualities would greatly reduce options available to the decision maker. It would seem fundamental to military strategy that limiting options in warfare is undesirable. Wider range of choices allows the military commander to place the proper forces at the proper point at the proper time. Force structure cannot ignore the realities of financial constraint, yet it must be driven primarily by time-proven principles of warfare and doctrine.

The second alternative is a variant of the previous option, but instead of merely allowing atrophy to set in, we could scrap the long-range

airlift force and concentrate on the short haul--tactical airlift. This would place complete reliance on the civil air carriers to provide long-range airlift. This option, like the first, has certain cost benefits which are attractive to the budget analyst. Contract airlift would undoubtedly be less expensive than the maintenance of a large organic airlift force. The military would be left to those missions which the civilian sector could not perform, perhaps cost effective, but not sound militarily. This option suffers again from the primary reliance on a low-bid philosophy. Timeliness and flexibility become of secondary importance. This inherent lack of flexibility in a contract airlift force limits its military utility. The need to response urgently to a crisis, which is a fundamental benefit of airlift, could be lost in a relationship which relies on contract. Correspondingly, the characteristics of military cargo aircraft are not those of their present civilian counterparts. Until an aircraft can be designed which could satisfy the civilian and military requirements, it would seem unlikely a civilian contractor could operate two different types of aircraft--one for military use, the other for civilian use.[2] Like its predecessor, this option for now should be avoided as it fails the critical test of doctrinal agreement.

The current DoD program is the third option in potential airlift solutions. Emphasis is placed on the long-range airlift force with little consideration for the short-range requirement. This program subscribes to the philosophy which believes the important factor is getting the cargo to the theater of operations. We would assume the forward movement of that cargo could be accomplished by the existing transportation infrastructure or tactical airlift. Prior to conflict, this assumption may have merit, but

only if the theater is an industrial region such as Western Europe. Its fatal flaw is, of course, its assumption. Western Europe represents a small area of the earth's land surface. Areas in Southwest Asia, Africa and the Pacific would depend extensively on air transportation as the only credible method of forward movement of supplies. Even in areas where sophisticated fixed transportation systems exist, traditional targeting doctrine would make these systems likely targets for interdiction.

This option, unlike the previous two, recognizes the value of an organic airlift force. It understands the flexibility, responsiveness, and maneuver qualities which only airlift can provide in the mobility triad. It simply does not go far enough. It fails to view the entire airlift system and ignores the final distribution leg which is the most critical. Failure to move the combat forces all the way to the objective area does little to support such principles as concentration of force and responsiveness.

The fourth option is the original Air Force program which favored the development of a new aircraft. Known as the C-X and subsequently the C-17, this aircraft leapfrogged the traditional hub and spoke transportation system by direct delivery to the objective area. Designed as an addition to rather than a replacement for existing aircraft, it was capable of carrying the large equipment currently restricted to the C-5. It also included the qualities of tactical airlift such as short-field operations, austere airfield capability, and multiple delivery modes via airland, airdrop, and air extraction.

The C-17 was a quantum leap in the traditional concept of the airlift system. The C-17 did not alter doctrine but rather reinforced it. It would capitalize on the flexibility and responsiveness which technology

has made possible. However, the program was confined to the C-17. Even with all of its qualities it was still a large airplane. Larger than a C-141 but smaller than a C-5, ground operations would still be a factor. Landing and taking-off on a short runway is only part of the equation when operating into austere fields. Any aircraft must have sufficient ground maneuver area to load and offload its cargo. The C-17 remains the best option yet presented, but even with the adoption of the C-17 program, serious shortfalls would still exist in intratheater movement of materiel.

The fifth option takes a different yet comprehensive approach. As espoused by Colonel Vincent Hughes (USAF, Ret.), this approach proliferates airlift aircraft by purchasing different aircraft for different roles.[3] Conceptually this option has merit because it understands the circular model of airlift where an unbroken stream of men and materiel flows from origin to user and return. It avoids the tendency to make one aircraft capable in all mission areas. It focuses on specific aircraft for specific needs simplifying the technology requirement.

Colonel Hughes' argument may be conceptually and doctrinally pure yet the impracticability of his program might doom it to failure. The requirement to purchase more C-5s and C-130s, develop a new aircraft like the C-17, and purchase a foreign aircraft like the short takeoff and landing G-222 ignores the reality of budget constraints. From significant aircrew training increases in multiple weapon systems to compounded logistical supportability problems, this option should not be seriously considered unless the true cost can be determined.

The final alternative combines the best qualities of the options presented. Though not radical nor exceptionally creative, it takes a close

look at national military strategy and matches a compatible force which is doctrinally sound and financially affordable. Foremost, the capability of our existing airlift forces must be maximized through increased utilization rates and spare parts. It is illogical to pursue expensive new weapon acquisitions until current forces have the necessary capability to accomplish their mission. This element of the option is in complete agreement with the current DoD program.

Throughout all the analyses presented and conclusions reached, tactical airlift is a critical leg. The C-130 was judged as an adequate if not highly capable aircraft to perform the mission. The only deficiencies included its age and its inability to haul outsize cargo. To correct these deficiencies, each one should be addressed separately.

To cure the relative age problem, purchasing new models as replacements for older ones can be done at a fraction of the cost of the current C-5 or even C-17. This would fix the tactical airlift force at its current size yet enable it to perform well into the next century.

Using the CMMS as the latest and most credible study, the intratheater outsize requirement may not be as significant as imagined. The CMMS identified a intertheater outsize airlift requirement of only between 17 to 27 percent. Understanding that a direct translation cannot be made between inter and intratheater requirements due to the flow of battle, a rough comparison can be made. Conservatively, 30 percent of the intratheater requirement is one the C-130 cannot do, but a substantial 70 percent is achievable.

To augment and fill the gap in outsize requirement for intratheater airlift, a new aircraft will have to be developed since none currently

exists. Additionally, with the C-141 scheduled to begin phase-out in the 1990s and the previously discussed shortfall in intertheater airlift, a system needs to be developed to satisfy that need. The C-17, which is presently in research and development, or a similar aircraft could be purchased to satisfy both the intratheater outsize shortfall as well as the intertheater movement and provide a long-range modernization program.

The entire option, as outlined, requires a long term commitment and is not obtainable immediately. Certain aspects of it, such as sustainability enhancement and C-130 procurement, can be obtained within the current Five Year Defense Plan. The new aircraft will require a longer period of time. However, short term or interim solutions should be avoided as they sap the scarce resources necessary to achieve the goal. Instant gratification cannot or should not be pursued when it competes with a more comprehensive, albeit longer, solution.

CHAPTER VI

CONCLUSIONS

> What we have lost in military matters in this generation is time. Time has been our solvent, our teacher, and our friend in all the wars of our history. It's no longer there, and in its place, we must substitute a readiness composed of several ingredients . . . modern weapons . . . autonomous mobility . . . thinking and planning . . . interoperability . . . and professionalism.
>
> General David C. Jones (1977)

As General Jones points out, time is no longer on our side. Decisions facing force structure, as never before, must have the vision to precisely design the capability to execute national military strategy. The purpose of this paper has been to make the link between strategy and doctrine and force structure--specifically airlift force structure. The paper has argued that force structure should be based on strategy and doctrine and not on the technological and scenario pulls which continuously tug at its sides. Airlift forces should be consistent with the forces it is carrying. Consequently, since the preponderance of the airlift requirement is generated by the Army, the airlift ought to be fully compatible with Army specifications.

Today the Army is changing. Attrition or fixed position warfare is a luxury of numerically superior forces. Maneuver war is a necessity for the forces on the side with less numerical strength. A gradual, if not radical shift in Army warfighting is currently taking place which emphasizes the value of maneuver and mobility. Is this not consistent with the classical strategists--maneuver and concentration of forces at the critical point? Does this not reflect our latest national security strategy? It

most certainly parallels our most current Air Force doctrine with its emphasis on maneuver, flexibility and responsiveness.

Even contemporary strategists who argue for change underscore this theme. As Admiral Stansfield Turner writes,

> A major element in the new strategy should be to retain and reequip the Army and Air Force with the flexibility for worldwide intervention in mind rather than just the static defense of Europe and Korea. Increased airlift is the prime requirement. That means more cargo aircraft. It also means lighter and smaller types of equipment to make any number of cargo aircraft go further. . . . All this calls for nothing less than a new mentality and new doctrine for ground forces and land based air forces.[1]

From those within the institutions to those without, philosophically and doctrinally there is agreement. The problem then becomes one of implementation. Airlift is the key to rapid mobility and maneuver and the Air Force must ensure it has the "right stuff" to do the job.

In designing airlift forces, the scenario-oriented analysis must be avoided. To restrict the focus to Europe, Korea, Southwest Asia, or any specific geographical region, is an artificial constraint which prevents conceptual flexibility. There ought to be characteristics of military forces which can be universally applied. With long lead times for weapon development, the scenario requirement may disappear before the capability designed to meet the requirement is met. For example, Air Force 2000 concluded that certain Middle East oil producers will wane in influence because of depleted oil supplies by the year 2000.[2] Yet, much of what drives our present force structure is based on a Middle East scenario.

By adhering to classical and current doctrine and viewing national security strategy as the driving force, the choices become more clear. Since airpower embodies the inherent characteristics of maneuver, flexibility, and responsiveness, airlift becomes the implementer of US

conventional strategy. Because airlift can produce the proper forces at the proper moment in sufficient quantity, it must be given the tools to do so.

Those tools, or force structure, are the elements contained in option six of the preceding chapter. That option best exploits current forces and provides the best long-term solution to airlift needs. However, it requires patience. There are no quick fixes, only a sequential and rational program which clearly views the airlift mission. The proper combination of existing resources and future improvements will ensure that airlift can meet its goal of executing national security strategy.

The airlift dilemma is, in microcosm, a view of the entire national security dilemma. To grasp at technological and scenario straws in an attempt to preserve national security only creates false hopes for an enduring solution. As a nation-state, the US is still in the adolescent stage and has not or cannot relate to classical or theoretical principles which in practice have been proven. There is always the tendency to look for the short cut, for instant gratification. The tragedy lies in the failure of the nation to achieve its national security goals through its military instrument, which could well be catastrophic.

There should be no question that national mobility assets allow the United States to maintain the conventional deterrence it enjoys today. However, the widening gap between national security strategy and the capability required must be redressed immediately and precisely with an airlift force built on a foundation of classical models and contemporary doctrine.

CHAPTER I

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4. L. K. Moseman II, "Ad Hoc Airlift Enhancement Committee," letter to Dr. Keel, Assistant Secretary of the Air Force (RD & L), 1 February 1982, p. 7.

5. John W. Paul, "The Thread of Doctrine," Air University Review 27 (May-June 1976): 3.

NOTES

CHAPTER II

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8. Ibid., pp. 5-7.

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11. Department of the Air Force, Air Force Manual 2-4, Tactical Air Force Operations: Tactical Airlift, (Washington, D.C.: Government Printing Office, August 1966), p. 3.

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16. Ibid., p. x.

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21. Airlift and sealift are self-explanatory terms; however, prepositioning requires further explanation. Prepositioning is the concept whereby a combat unit's heavy equipment is forward deployed in theaters where conflict is likely. Air Force, Army, and Marine prepositioned equipment currently exists in Europe and Southwest Asia.

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23. United States Military Posture for 1983, p. 54.

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2. "Readings in Military History," cited in Air Force Magazine, 1969, pp. 233-237.

3. Jay, p. 55.

4. Ibid., p. 68.

5. Committee on Armed Services , p. 28.

6. Ibid., p. 27.

7. Ibid., p. 28.

8. Department of the Air Force, "Airlift: Integral Part of Combat Capability," a briefing presented to Deputy Secretary of Defense Carlucci on January 8, 1982.

9. There are three measurements in measuring cargo. Bulk cargo is cargo that can be loaded on a 463L pallet and does not exceed the dimensions of that pallet (all military cargo aircraft and cargo-capable civilian aircraft are compatible). Oversize cargo is cargo which exceeds the bulk cargo definition but not greater than C-141 limitations (C-130, C-141, and some civilian aircraft are compatible). Outsize cargo is that cargo which exceeds oversize dimensions and can only be carried on the C-5. Air Force Regulation 76-2, pp. 4-5.

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2. Ibid., p. 77.

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12. Ibid., pp. 312-313.

13. Congressionally Mandated Mobility Study, p. 25.

14. Ibid., p. 6.

15. Moseman, p. 1.

16. U.S., Congress, Department of Defense Appropriations for 1983, p. 462.

17. General Lew Allen, "Airlift Decision," message to CINCMAC and AFSC/CC, 22 January 1982.

NOTES

CHAPTER V

1. "Airlift Issues and Programs," a briefing prepared by Headquarters, United States Air Force, 1982.

2. US civilian air carriers currently participate in the Civil Reserve Air Fleet program which provides augmentation intertheater airlift. Their capability is limited to passenger and bulk/oversize cargo. Some member NATO countries, as well as the Republic of Korea, have agreed to provide civilian aircraft in case of conflict in their respective theaters. The limitations of these civilian augmentation aircraft are their responsiveness and inability to airlift critical equipment due to size restrictions.

3. Hughes, p. 32. Colonel Hughes recommends 5 Aircraft: (1) G-222 type, STOL (short takeoff landing) capable with the ability to operate into 2,000 ft airfields. (2) C-130 H, capable of operating into 3000 ft airfields. (3) New development, outsize-capable primarily used for intratheater movements. Capable of operating into 3500 ft airfields. (4) New development, a version of the previous aircraft only slightly larger with the capability to operate into 4000 ft airfields. (5) C-5/747 mix.

NOTES

CHAPTER VI

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