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Strategy and Logistics for the New World Order

by

Cory W. Gildersleeve
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Thesis Advisors: R. Mitchell Brown
Dan Trietsch

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This is an interdisciplinary analysis of the post-Cold War world to determine the optimal strategy to attain the national interests of the United States, and the requisite logistic structure to support that strategy. The optimal solution is found to be a strategy based on multinational defense centered on a permanent force of United Nations garrison port complexes. This multilateral force would be augmented by as small a national defense force as necessary to ensure national security.

The thesis endeavors to reconnect the cultural and philosophical past of the United States with its immediate future. National interests are identified through examination of American Pragmatism and the philosophies of John Locke and Jean-Jacques Rousseau. To determine the current status of common defense based upon Foreign Military Sales system, an analysis of current data is accomplished.

Future threats to the United States are examined with special emphasis on

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Strategy and Logistics for the New World Order

by

Cory Ward Gildersleeve
Lieutenant, Supply Corps, United States Navy
B. A., Yale University, 1973

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December 1990

Author: Cory Ward Gildersleeve
Cory Ward Gildersleeve

Approved By: Dan Trietsch
Dan Trietsch, Thesis Co-Advisor

R. Mitchell Brown
R. Mitchell Brown, Thesis Co-Advisor

David R. Whipple, Chairman, Department of
Administrative Sciences

Thomas C. Bruneau, Chairman, Department of
National Security Affairs

ABSTRACT

An interdisciplinary analysis of the post-Cold War world to determine the optimal strategy to attain the national interests of the United States, and the requisite logistic structure to support that strategy. The optimal solution is found to be a strategy based on multinational defense centered on a permanent force of United Nations garrison port complexes. This multilateral force would be augmented by as small a national defense force as necessary to ensure national security.

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I. INTRODUCTION

A. LOGISTICS FOR THE NEW WORLD ORDER

Logistics for the new world order is a broad and unexplored topic. It is all too easy to dismiss logistics as the work-a-day preparations for supporting the defense structure, and miss the significance of the changes which have occurred in the world and how substantially these changes have affected logistics requirements. A spokesman for the Secretary of the Navy's Office of Program Appraisal delineated lessons learned from the "Desert Shield" operation in the Persian Gulf [Ref. 1]. Among the lessons is that *strategy becomes logistics when it moves from paper to action*. In fact, logistics and strategy are inseparable. As the world assumes a new order, strategy and logistics must change.

B. NATIONAL INTERESTS, OBJECTIVES, AND STRATEGY

This thesis addresses the fundamental question of what our national strategy needs to be and what forms our logistic structure can assume. It involves a close examination of ourselves as a nation. The present and future threats to the United States are examined. Potential logistic structures are examined in light of the threats and conclusions are made.

1. A Return to the Basics

Critical to this analysis of national strategy is the most basic issue of national interests. Just as no sound building can be built upon an unsound foundation, no national strategy can be built upon erroneous national interests. Often this is a sin of omission, where a strategic planner assumes some national interests without exhaustively examining their genuineness. An

example is the assumption that it is in our national interest to place our economic well being ahead of our trading partners. It is not so. Nor, however, is the converse true. A problem arises when the erroneous national interests are translated into national objectives, and we attack the objectives through some national strategy that at best is ineffective at addressing our national interests and at worst actually run counter them.

2. Allies and Coalitions

The national strategy which is discussed in Chapter III is centered around coalitions and allies. It examines the problem that very few natural allies exist, and how a poor selection of allies will defeat our national interests. This is because the national interests of the United States are based upon the needs of free men and any alliance formed with a repressive government undermines these national interests. This is a critical area for planning logistic support because it necessitates rethinking some of the cooperative arrangements which were formed during the Cold War.

3. The Impact of Foreign Military Sales

The fourth chapter investigates the Foreign Military Sales option for creating common defense. It is examined from the perspective of the client state. Unfortunately, it is found to be ineffective at providing defensive strength while being unduly expensive for the American taxpayer. Necessary improvements to the system are suggested. Foreign Military Sales provide a needed means of common defense, but they must be better managed.

National strategy for the new world order must address the emerging landscape of a multipolar world. Whereas in the recent past it was possible

to define our defensive needs according to the capabilities of the Soviet bloc, today the whole world must be scanned.

4. Nuclear Terrorism and a Conflict in Cultures

Intrinsic conflicts arise where closed societies are confronted by the expanding influence of American culture. These conflicts are most problematical when the closed societies have the military power to threaten the United States and its allies. Therefore, a close examination of the problem of nuclear proliferation in third world nations—especially among the nations along the southern littoral of the Mediterranean Sea—is undertaken in Chapter V.

C. FUTURE STRUCTURES

The logistic structures which may satisfy future national strategy are explored in Chapters VI and VII. At one extreme, a system of United Nations garrison port complexes is explored as a means of providing common defense for all nations of the world. At the opposite extreme, necessary elements of unilateral defense are examined. These include utilizing mobile ocean basing to replace basing in foreign countries and a system of barge delivery to increase sealift capacity. The choice between unilateral defense and coalition defense is examined in terms of desirability and affordability.

The optimal solution to attaining national objectives changes with the restructuring of world power. In a strongly polarized world the strategy of multinational cooperation and common defense was an extravagance which could not be afforded. In a multipolar world that is generally at peace, strong unilateral powers may be an extravagance that cannot be afforded. The world is clearly headed in the direction of multinational cooperation and, as the threat to the United States from the Soviet Union diminishes, we must shift to

multilateral arrangements with less investment in a nationally unique defense structure.

D. AN OPTIMAL SOLUTION

Chapter VIII presents the optimal solution to accomplish our national interests. The impact of this potential change on the logistician is the understanding that our present structure must change. Multilateral forces are equipped with weapons and support equipment from many lands. Even if the bulk of the gear is from the United States, much of it will not be. Codifying the repair parts, purchasing the materials, and dealing with foreign suppliers demand new skills. Weapons procurement, presuming it is freed from "made in the U. S. A." constraints, will be vastly changed. All of this will occur while our independent national forces are being reduced.

This thesis endeavors to reconnect the cultural and philosophical past of the United States with its immediate future. It strives to discover the national strategy which—whether clearly articulated by the leadership or not—is most likely to evolve. Strategy becomes logistics when it moves from paper into action. This is as true whether the strategy is long-planned, tested, and war-gamed or if it is invented in the heat of the moment. While it is not for the logistician to devise strategy, it is only prudent for him to discern through whatever means are available what the strategy will be.

II. A NEW WORLD ORDER

A. EMERGENCE OF A NEW ORDER

Today in 1990, just as the United States has achieved military preeminence in the world by virtue of the rapid economic and social decline of the Soviet Union, there are voices who question the value of being a military superpower when there are no others to rival that stature. Our former enemies have eschewed military achievements in favor of economic concerns. No new nation is rising up to threaten the world with domination. Therefore, why should we continue to pursue military strength, especially if it can only be done at the expense of improving social or economic conditions? This is an essential question, and the answer to it will drive not only America's future, but the rest of the world for the foreseeable future.

The United States is an insular, comfortable, peaceful nation that is unique in the world. It is also young, and without an extensive cultural basis for involvement in world politics. Our belated entry into two world wars underscores more our desire to live apart than our desire to help enforce justice and decency. The Cold War, which may be concluding, had thrust us into the world and caused us to play an important role in the world that otherwise we would not have undertaken. Today, with the impetus of the East/West clash weakening, it is quite possible for the United States to opt to "disentangle" itself from foreign alignments.

A clear understanding of the national interests and national objectives of the United States is generally admitted to be an important step in formulating the conduct of international negotiations of any sort. Unfortunately, the

interests and objectives cited are not often consistently and analytically developed. This chapter is an effort to build the requisite foundation for all of our national strategy and related negotiations. As any builder knows, flaws in the foundation cannot be repaired, and the structure will always be weakened. If we do not take particular care at this stage, we will subsequently fail.

The design of a logistics structure to support military strategy, which is the ultimate aim of this thesis, must await determination of the military strategy. Similarly, military strategy must await the formulation of national strategy. In order to rationally develop the logistic structures which will be required in the future, it is necessary to reevaluate our national strategy in the light of the many changes which the world has recently undergone. This chapter lays down the national objectives and discusses the strategies appropriate to achieve them. Often the strategies do not involve military action, and hence require no logistic support. Regardless of the need for military strategy, a full examination is in order to better ground the understanding of the role of America in the new world order.

Although the temptation is strong to immediately jump into a discussion of "potential military contests" and try to establish rationalized underpinnings for a defense budget, it is premature to do so. Strategy is not properly formulated by merely trying to identify and avoid risks. Good strategy is a positive process. It is the plan by which improvements are achieved. Our national strategy must provide not merely for our survival but for our triumph.

The only Western precedent for the present status of the United States is the Roman Empire. As Rome expanded in physical dimensions, it also expanded in its variety of people and cultures. It provided a legal system and

physical infrastructures in the lands it incorporated. But, as Gibbon pointed out, the Roman Empire began to decline as soon as it stopped growing. [Ref. 2] A lack of forward motion, the loss of an ultimate goal, is just as deadly for large organizations as it is for small. The United States must, therefore, continue to expand and triumph in the international arena. This is not, fortunately, a goal that is in deadly conflict with other nations, because the expansion is not of real estate.

The end of East/West conflict for many is the achievement of the ultimate goal. It is the end, and no new direction exists. This does not merely apply to hard line anti-Communists. It also applies to the billions of people who are a part of the East that has failed. Once there was a Lenin, a Mao, even a Stalin in whom to believe. Today there is only poverty and proof that their system is a failure. The future is now for the citizens of the Soviet Union and China, and it is decidedly bleak. There are no more dreams, no more suppression of today's needs in service of the ultimate triumph of world socialism, only poverty and tyranny.

The magnitude of the failure of communism is so huge that it is difficult to comprehend. It is of a scale similar to having Christ discredited and the Roman Catholic Church abolished by the Pope. The monster by the name of Communism is dead, but the corpse still remains rotting and stinking. The death smell permeates every aspect of life in the East. This is an epochal time. It is not merely the "end of the Central Front."

Although for the proponents of communism the road is at an end, for Americans the ultimate goal is not yet at hand. The United States has

outlasted the threat of world socialism, but it has not triumphed. The national strategy to achieve the victory is in need of redefinition.

It is time to reexamine, and if need be to redefine our national objectives. Once this is accomplished we will be able to redetermine our national strategy. The changes in the world over the past few years must be examined. The discrediting of socialist theory is not the only significant event that has occurred.

B. DEFINITION OF OUR NATIONAL OBJECTIVES

Our national objectives, which our strategy aims to achieve, are a function of our character and needs. We need to survive. We need to be secure in our homes. So much is obvious. Less obvious is our need to proselytize the belief that the individual, the single being, is the only legitimate source of power in the state. No matter how difficult and clumsy the efforts to achieve it, the state must be made subservient to the individual. Furthermore, all social organizations must be subservient to the individual. This includes political parties, churches, the aristocracy, and corporations. Many side effects follow from this primary notion. The sovereign individual can make his own living as he chooses: capitalism. The individual can voice his opinion. He cannot be denied access to the opinions of others. He can run for office, or at the very least vote to help determine who will hold office. Most of all, he is free to become the best person that he is capable of becoming.

The national objective to promote democracy has many ramifications beyond encouraging others to hold elections in their nations. The belief that the individual is the source of legitimacy for the state is, first of all, an irrational idea. There is no incontrovertible evidence that social structures must be so

organized. Nevertheless, we believe it to be the case, and will die if necessary to ensure it is so. We act upon our faith that the individual is paramount, and we preach it as religion to the world. Unlike Communism, our belief system has provided peace, prosperity, and personal satisfaction.

The individual is the sole source of sovereign power, yet the individual cannot become paramount without creating a chaos of conflicting rights by the many individuals. Consider the words of the Declaration of Independence:

> We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.–That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed.... [Ref. 3, p. 34]

It is easy to see the relationship between the government and the people: the former exists by the consent of the latter. This is the thought of John Locke who wrote that free and equal rational men could exist in relative peace. "These men will invest their labor with the earth and the fruits thereof, and thus earn private title to possessions previously deemed to be held in common [Ref. 3, p. xxxvi]." Property, which Locke equated with "life, liberty, and estate," becomes a primary right. Government is created only secondarily to protect the primary rights. Jean-Jacques Rousseau added to Locke's ideas the notion that "the political subjection of the individual to the community (is) an ethical act [Ref. 3, p. xliii]." The dynamic tension between the rights and obligations of the individual prevent both chaos and tyranny.

To repeat the essential kernel: free and rational men, behaving in accordance with moral laws, lab · to produce private possessions. They are not to be subjected to any powe ɔther than God or the community. Powers which must certainly not reign over men include kings, parties, aristocrats,

religious figures, and corporations. Whenever one of the preceding powers rises up, it must be brought down. If any caste or group asserts its preeminence, it is denied. The pejorative terms Tory, Big Business, Big Government, Papist, and Red all find their common emotional power in the antithesis of Americans to organizations that would usurp the individual sovereignty of men.

The importance of this concept cannot be over stressed. It may sound like a tired civics lesson, but it is the single most powerful driving force in the world. It stands behind every step in our national strategy.

1. Individual Sovereignty and American Pragmatism

The correctness of the notion of "individual sovereignty," which already has been identified as being irrational, can be demonstrated. The evidence flows from American Pragmatism, a philosophy best identified with Charles Peirce. Pragmatism is a philosophy that is closely patterned on the scientific method. It does not purport to identify "truth" in the sense of absolute knowledge. Instead it is a process by which the best Beliefs survive the critical examination brought about by Doubt. Peirce explains:

> Belief is not a momentary mode of consciousness; it is a habit of mind essentially enduring for some time, and mostly (at least) unconscious; and like other habits, it is (until it meets with some surprise that begins its dissolution) perfectly self-satisfied. Doubt is of an altogether contrary genus. It is not a habit, but the privation of a habit. Now a privation of a habit, in order to be anything at all, must be a condition of erratic activity that in some way must get superseded by a habit. [Ref. 4, p. 189]

Belief, or "truth," is an accepted idea until it is challenged by doubt. However, this is not a process that can be voluntarily accomplished.

> It is important for the reader to satisfy himself that genuine doubt always has an external origin, usually from surprise; and that it is as impossible for a man to create in himself a genuine doubt by such an act of the will as would suffice to imagine the condition of a mathematical theorem, as it

> would be for him to give himself a genuine surprise by a simple act of the will. [Ref. 4, p. 189]

Once the doubt arises, it upsets the "habitual belief" and demands satisfaction. Either the old belief is right, or another belief is better.

> However the doubt may originate, it stimulates the mind to an activity which may be slight or energetic, calm or turbulent. Images pass rapidly through consciousness, one incessantly melting into another, until at last, when it is all over--it may be in a fraction of a second, or in an hour, or after long years--we find ourselves decided as to how we should act under such circumstances as those which occasioned our hesitation. In other words, we have attained belief. [Ref. 4, p. 119]

Through this process every belief stands ready to be challenged whenever a doubt arises as to its veracity. The occasion for doubt occurs in the social context. This is important to understand. No belief or "truth" can exist in one mind alone, it must be shared and socially verified. A blind man might hold up an apple to a number of passers-by to ask if it is a red apple or a green apple, he will hear their answers and accordingly judge the apple's color. A seeing man, holding the belief his apple is red, might do the same thing, and be forced to come to the conclusion the apple is in fact green if too many people tell him so. The seeing man, having some basis for his belief, will require more social verification, but if he is rational he will have to come to the conclusion that his belief is wrong.[1]

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1 Some readers will be uncomfortable with the idea that a random group of people will determine the color of the apple, since they "know" the apple is "in truth" either red or green. This is a remnant of the European philosophical tradition. The apple may be red or green, but its "true" color will only be exposed when an angel floats down and whispers in our ears what the color is. Pragmatists do not wait for the announcement of absolute truth, but act as best they can.

Nor must their action be deemed "relativistic." The Pragmatic process takes place in a social setting, and the result is a product of the society, not the individual. An individual cannot kill a moth, a dog, and a man and then say, "its all relative." Society will excuse the death of the moth, fine him for the dog, and hang him for the murder.

Pragmatism is a process that only demands openness and communication. Through it beliefs can be raised, challenged, refined, and raised again. No belief stands as "absolute knowledge," but such stuff may be beyond mankind anyway. It works. It is so simple that many question whether America in fact has a philosophical tradition. Pragmatism is the basis for American belief building.

How Pragmatism relates to the belief that the individual is the source of sovereign power is very simple. The belief, now hundreds of years old, still stands. It is held without doubt by virtually all Americans. It has insinuated itself, through the Pragmatic process, into the minds of billions of people around the world. It is the germ of an idea for which no antidote has been found. Someday it may be successfully challenged and replaced, but until that day comes it will remain as potent and virulent as it was in 1776.

This is the cornerstone of our national objectives. From it the first course of the foundation can be laid. It is deceptively simple, like a single crystal, but once the seed crystal is in place a large and complex structure begins to evolve.

C. NATIONAL OBJECTIVES

Locke's rational man needs a peaceful world in which to perform his labors to produce "life, liberty, and estate." *Therefore, freedom from external theat is the first national objective.* Peace on American soil holds a higher priority than

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It has been pointed out that a very similar process occurred in Nazi Germany when the idea "Jews are evil" was drilled into the minds of the people. Propaganda is most powerful when freedom to speak and debate are denied. Parabellum Germany stands as the best example of the danger of allowing the Pragmatic Process to be controverted by tyranny. Effective dissent is essential to the pragmatic process.

peace abroad, but since "every man is created equal," etc., then peace abroad is also important. *The second national objective is to enforce peace abroad.* Since the individual man is the master of his government, party, corporation, etc., then wherever this relationship is perverted, it must be righted. No man, of any nation, must be abandoned in his struggle to overcome tyranny. *The third national objective is to defend men from organizations.* Every individual must labor to produce his own private property, and do so in a manner that is not harmful of the greater community. *The fourth national objective is to defend private property.* No individual must be allowed to conduct himself so that his welfare is held above that of the greater community. *The fifth national objective is to defend men from tyrants.* Every man must have the free speech and press to be able to compare his beliefs with those of others, so that he can find the best beliefs. *The sixth and final national objective is to defend free speech and free press.*

1. Peace at Home and Abroad.

These six national objectives need to be expanded and translated into a more current context in order to formulate a national strategy from them. The first two objectives: security of the United States and peace abroad are relatively simple. No foreign foe will be allowed to invade or attack the nation. Furthermore, no war will be ignored that has the potential to affect the security of the United States. Ideally, no war will be ignored anywhere at any time. Unfortunately, objectives cannot be fully realized at all times.

The balance between voluntarily entering our own citizenry into war, and thereby jeopardizing their fundamental right to life, liberty, and estate, and intervening in a war to protect the rights of others, is difficult to judge. It is obvious that at some point we ought to intervene, and that we can do so

sooner if we have the capacity to efficiently wage war with a minimum loss of American lives. Using highly advanced technology and pilotless vehicles could enable intervention in a regional war with reduced risk of American life. The only expected costs for such intervention are the monetary costs which impinge upon our citizens' rights to private property. Converting private property to public taxes must only be done to improve the general welfare. The more distant a war or police action is from America, the less rationale there appears for our own citizens to bear the burden of the cost, whether in blood or property.

2. Defending Men from Tyranny

The third stated national objective, to act to defend every man from tyranny, has many forms. Citizens of nations where the government denies them access to democratic process need our support. Citizens of nations that deny them the right to hold the private property which their labors create also need our support. Citizens of nations that deny freedom of expression and press need our support. Actual examples of these situations exist in very familiar nations. Israel has an electoral system that appears to subvert the citizens' will in favor of a negotiating process that favors minor parties. Great Britain has rather harsh press controls and severely limits the broadcasting of independent television stations. Japan tries to maintain a capital market that captures the savings of its citizens at very low interest rates for its major corporations. Greece and Australia have tariffs as high as 100% on personal items such as computers or automobiles. The most familiar form of tyranny, such as that of Castro, must also be fought. *Paramount, however, is the orientation that the people of the subject nation must be defended, rather than the*

government. Where the government is a representation of the people, this is less important. In Mexico and South Korea where it is not at all clear that the government represents the people, it is very important to act in the defense of the genuine sovereigns: the individuals.

3. In Defense of Private Property

The fourth stated national objective is that every individual must labor to produce his own private property, and do so in a manner that is not harmful to the greater community. This is more than just a supporting statement for capitalism, it is what used to be termed the Protestant Ethic. It necessitates the establishment of conditions which allow free and equal men to labor and retain their earnings. As a part of the establishment of conditions, special treatment may be accorded those who are seen to be, through no fault of their own, less able to produce. Such special treatment can be seen in the domestic context in such programs as Headstart and Disadvantaged and Minority Contract Preferences. In the international context protective tariffs within developing nations are accepted as a means of correcting the "inequality" of the status quo. Looking at the general case rather than the exceptions is more instructive.

a. Man as laborer and as consumer

Men must be allowed to do their best, produce the most efficient goods, and receive the value for their labor. This is true no matter in which nation these workers reside. Free trade both fully rewards the man-as-laborer and minimizes the loss to the man-as-consumer. So long as the producer does not violate the rights of his laborers or produces in a manner harmful to the ecology, then he should be free of government interference.

According to Locke, his right to the product of his labor is a higher claim than any government can make. The restraint offered by Rousseau, that man has a social contract to contribute to the general welfare, limits the worker's right to keep all of the product of his labor. Where the balance between worker and society is established is determined by the Pragmatic process within each society. What is generally agreed to as reasonable is "the right point." Between societies, naturally, there is disagreement as to the correct point. America must argue that the correct balance is exactly as our own, and stand ready to have our own equilibrium point redetermined if the ensuing argument would so indicate.

b. The shifting balance

This balance point can best be seen as the overall rate of "taxation," and it is noteworthy to see that it has changed over time within America. When Mark Twain wrote *Innocents Abroad* in the late nineteenth century, he pointedly noted the 33% tax rate imposed on most Europeans was their downfall, and that the correct rate was nearer to the 7% back in America [Ref. 5]. For whatever the reasons, we now pay in the vicinity of 30% to support the general welfare. We do not now, however, regularly tithe 10% of our income to churches, spend weekends helping raise our neighbor's barns, or open our homes to three generations of family.

c. Free trade as a logical extension

Free and equitable trade, and production within moral and ecological guidelines, are the most common expression of this national objective. It is a powerful objective, because it empowers the individual citizens within foreign nations. This objective seeks to reward their labor,

justify the reward, and dignify the laborer. It is also the case of "the seeing man holding an apple he believes to be red." In many nations thousands of years of acculturation has enforced the belief that the king, ruling class, or other social organization is superior to the individual. It will take many repetitions of "the apple is green" before such entrenched beliefs change. Our objective is to do just that.

Japan is a nation that is presently very successful at manufacturing consumer products, and has displaced American manufacturers from American markets. This has created doubt that American manufacturers know the best means to produce, and has generated a glut of "do it the Japanese way" books. This is also an application of the Pragmatic process, and it will generate new beliefs superior to the old. An open society invariably benefits from interchange. The details of this controversy will be further examined later in the chapter.

4. Defense against Tyrants

The fifth national objective is to ensure no individual is allowed to conduct himself so that his welfare is held above that of the greater community. This is directed against despots, dictators, and aristocrats. Although not all men are created equal, in the sense of their physical and mental abilities, no man is created that is superior. To be consistent with the idea of individual sovereignty, we must not support or abet those who hold their welfare above that of the citizens of their nations. The expression "better the dictator we know than..." is highly corrosive of our national objectives. The cost of supporting individuals who are tyrants is exceedingly high. Doing so effectively short-circuits our national objectives. The only rationale for ever

doing so is to secure a vital objective, such as preventing war against the United States. It appears that we have supported many dictators for much less compelling reasons. However, most instances had to do with "preventing the spread of Communism," and were deemed appropriate. Since the threat of Communism has thoroughly abated, there exists no present reason to controvert our national objectives by supporting tyrants.

5. Defense of Free Speech and Free Press

The final national objective is that every man must have freedom of speech and press. This is the objective to make open societies of all cultures. Karl Popper championed the idea of the open society just prior to World War II. It is a society where men rationally determine their own fate, and is contrasted to a society where unchallengeable laws or taboos are passed down to individuals.

> In our own way of life there is, between the laws of the state on the one hand and the taboos we habitually observe on the other [such as taboos of politeness], an ever-widening field of personal decisions, with its problems and responsibilities; and we know the importance of this field. Personal decisions may lead to the alteration of taboos, and even of political laws which are no longer taboos. The great difference is the possibility of rational reflection on these matters. [Ref. 6, p. 173]

The open society is created when information is freely available, and the citizens are able to rationally review their beliefs. The Pragmatic process is the essence of the open society. However, it is easy to accept the notion of a "rational society" without appreciating the intense discomfort which openness brings. The citizen of an ancient society may find the uncertainty associated with doubting and reassessing fundamental tenets as too frightening to do. If there is no "likely outcome" to his reflections, he will not move. America, fortunately, presents the "likely outcome." As an open society that has existed

for several hundred years, it has worked through the problems of what may arise if age old beliefs are abandoned for new beliefs. Popper further analyzed that there is no choice. Everyone, if they desire to avoid "romanticized gangsterism," which he termed Communism and Fascism alike, must venture into the open society:

> But if we wish to remain human, then there is only one way, the way into the open society. We must go on into the unknown, the uncertain and insecure, using what reason we may have to plan as well as we can for both, security *and* freedom. [Ref. 6, p. 201]

Freedom of speech and of the press are not in themselves a guarantee that a society is or will become open. However, it provides access for America to insinuate our ideas into the society. Modern music, dance, television shows, movies, and consumer products all convey a message. "Here is an alternative culture, and it can be yours for the asking." "Why are we so rich, and you so poor when you work so hard?" But more fundamentally, "You have dignity and the right to make your own choices." It may seem absurd, but Rambo and Michael Jackson advance our national objective to open the societies of others.

D. THE NECESSARY CLASH OF CULTURES

Once a foreign society is opened, like unscrewing the top of a sealed jar, the Pragmatic process can begin. Eventually the result will be American-like. Examples exist: Canada is very like America, probably because of a shared intellectual heritage. Japan and West Germany, reformed after World War II, are now startlingly American-like compared to anything in their long histories.

Our final national objective is to gain access to other societies, and share with them every aspect of our culture. In the process change will occur not

only to the foreign society, but to all the open societies, as the best beliefs are assimilated. This process might be derisively called "culture busting." It certainly has the element of restructuring associated with it. It is an aggressive policy. It is also a policy with some risk attached to it. *Certain societies, particularly fundamental Muslim ones, have realized the threat and have violently acted to counter it.*

Unfortunately, we have generally been unaware of the entire process. Where risk was high, we did not proceed with caution. Where risk was minimal, we did not move with authority. When clear signals to champion the belief in the sovereign individual could have swayed a people, we sent mixed or even perverted signals. It is clearly impossible to effectively delineate national strategy without first clearly identifying our national objectives. At this point, the national objectives have been sufficiently identified and discussed so that a national strategy can be formulated.

E. LIMITATIONS OF A NATIONAL GOVERNMENT

The national strategy of the United States begins with a problem. Most of our national objectives deal with achieving goals associated with the individual inhabitants of foreign nations, not with their governments. The United States is, after all, fundamentally the will of our people and not the Government of the United States. Our government is merely the plenipotentiary of our sovereign people. The governments of other lands are, to be consistent with our view of the individual, at best the same and at worse merely "pretenders to the crown" of their states. When we deal with foreign states, we must strive to address the true sovereigns and their concerns rather than make the mistake of dealing exclusively with their governments, and potentially alienating the people. This

inconvenience must constantly be borne in mind when trying to implement national strategy.

To briefly reiterate the six national objectives:

1. Maintain peace from external threat.
2. Enforce peace abroad.
3. Defend men from subjugation by organizations.
4. Defend and encourage private property which is morally created.
5. Defend men from subjugation by tyrants.
6. Defend free speech, free press, and open access by others.

The ultimate goal to be attained is the creation of a peaceful world, wherein no man is subjugated by any organization or dictator, where men labor to produce their own "life liberty, and estate," and where the laws and customs are rationally considered in an open society. It is not utopia. It is a system which guarantees rational conflict, but it is at least a self-evolving, self-improving society. It is also not fully achieved.

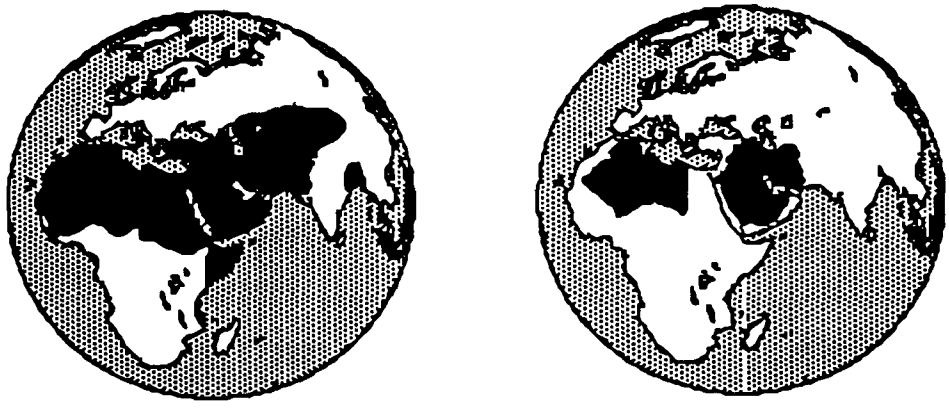
F. DEVELOPMENT OF THE NATIONAL STRATEGY

The national strategy to defend against foreign enemies is developed as a function of the assessment of threat. Who desires to do violence to America? How capable are they? How likely are they to act? Will others join the list of foes, and why? The key question is why another nation would want to do violence to America.

Communist states understood the essential conflict between their national objectives and our own. We consider the individual to be paramount; they consider the individual to be a mere atom of the socialist state. A violent dimension to the conflict must be considered possible.

Other closed societies that feel threatened by our national objectives must also consider violent solutions to meet that threat. The violent reactions

range from the terrorist attack to a full scale world war. These societies or governments must be watched and defended against. Some of these societies, such as the tribal societies of Africa, pose no significant threat. Others are very dangerous. Foremost are those closed societies which we must deal with to maintain our supplies: read "oil." Figure 1 illustrates the conformity of the world's oil resources with the Islamic World.



The Islamic World 60% of the World's Oil Reserves

Figure 1. The Coincidence of Oil and the Islamic World [Ref. 7]

Islam is not singled out as the only closed society in the world. It is not even a "society," but rather is a series of cultures and nations. It is, however, the center of resistance to the Western Influence that our national objectives aim to advance. It is also the region of the greatest arms proliferation that could prove capable of significant war. Ballistic missiles, chemical and biological weapons, and nuclear arms exist in many of these nations which, at their base, are fundamentally opposed to the national objectives of the United States.

Opposition also exists in Communist countries, such as North Korea, China, and the Soviet Union. Changes have occurred, but these societies have

not changed so much that they are open and peaceful. Significantly, the realm of possibilities which lie before the Soviet Union-after-Communism (or China-after-Communism should such occur) include many things in addition to American-style democracy. Fractionalization into a series of closed societies, a process that is termed "Africanization," may well happen. If Africanization occurs, the sum of the constituent parts of the Soviet Union may become more threatening to the United States because each could very well end up armed with nuclear weapons. Each would have to be dealt with separately but simultaneously. The interests and arms of each could be merged with a neighboring state (such as Iran) with the result that a grave threat to the United States could immediately arise.

1. Military-Political States and Trading States

According to Richard Rosecrance, there are two fundamental types of states: military-political states and trading states. This distinction is introduced here because each type of state requires a different approach. The military-political state arose with the birth of nationalism and conscript armies in the 1800's. It is the world of power politics, empire-building, and wars. Preservation required watching the strength of neighboring states.

> But how could one state prevent another from gaining more power? Only by defeating it and then reducing its size and strength. Hence the maintenance of equality and equilibrium frequently required war, and the ruling presumption of the Western military-political system was that war could rationally be waged. The objective of the state system could never be peace, certainly not peace as an overriding objective. [Ref. 8, pp. 99-100]

The Soviet Union, China, North Korea, and many of the closed societies such as Iraq are military-political states. War is, for them, simply part of the system of interactions between states and must be either waged or

prepared to be waged. Although war is antithetical to the national objectives of the United States, it would be criminally imprudent to fail to prepare to deal with military-political states.

In general, the national strategy for dealing with these states is to maintain the military power necessary to deter them from acting, to defeat them should general war arise, and to prevent "squirrel bite" attacks–such as terrorist acts–against Americans and their property. Additionally, our strategy is to maintain as much friendly contact with them as possible, and continue to open their societies.

A clearly defined military policy that is publicly announced is "an amateurish idea," according to Walter Lippmann.

> These are the amateurs [at diplomacy], some of them wearing uniforms, who think they can solve the Far Eastern problem by a series of public commitments...What they succeed in doing in their clamor for public commitments of this kind is: (a) to embarrass the serious and well-informed soldiers and civilians who know what it would mean and what it would cost to make good on all these threats; (b) to alienate great multitudes of the people of Asia and of Europe who fear and distrust a nation which talks so much and on so many different occasions about the terrible destruction and human agony it can and may cause; (c) to imprison our diplomacy in the formula of all or nothing–in a self-inflicted strait jacket where it can do nothing by negotiation because that is by definition appeasement and it can do nothing by the big threats because that–in their own sober second thoughts–is suicide. [Ref. 9]

It is sufficient to gauge the potential lengths of the supply lines and physical properties of the lands where military actions may take place. To draw up invasion plans for every potential contingency and publicly display them is of no merit. It will not be done here.

2. Strategic Defense

This is the first national objective. The rationale behind potential enemies have been identified. States that have the power to annihilate the

United States through the use of intercontinental ballistic missiles are being countered by a program of deterrence: mutually assured destruction. Such a policy is based upon a slippery rock. It is a "rational" deterrence. Rational men would not act so as to destroy the world. Unfortunately, ancient closed societies are by their definition "irrational." In Popper's terms, these are societies that are regulated by taboos that are beyond man's ability to question. To act in defense of the "irrational" does not imply "rational behavior." The Soviet Union and China are not ancient closed societies: they are closed dictatorships. Some other potential adversaries are ancient closed societies, and *it is important to note that the deterrence that has worked in the past may deter them not at all.*

3. Defending the Brotherhood of Man

The second national objective is to enforce peace abroad. Wars are seldom fought between the peoples of states. That is to say, wars are usually fought by governments with at least one government seeking to impress its will on the other. The primary rights of the individuals–for peace, liberty, and estate–are invariably violated. Finding the guilty party is often easier than finding an innocent party: both governments often are acting in violation of their people's rights. When an innocent party can be identified, it should be aided. When both sides are guilty, the war should be minimized.

This national objective is difficult to pursue because in every case it necessitates some measure of impingement upon the rights of Americans. In the extreme case it requires many American lives. At the very least it requires an assessment of the property of Americans. Nevertheless, preserving peace is such an important good that it must be done. Our civilian and military

leadership must invigorate the public to support wise peacekeeping efforts. To deny the responsibility is to deny the veracity of the central tenet: that the individual man is the source of legitimate power in society.

Keeping the peace does not merely mean having conventional forces to counter aggression. It has another, less deadly, aspect: maintaining free world trade. The military-political structure of the nineteenth century was given a brief respite during a period of "free trade." How this period ended, and what the results were, clearly indicates why free trade is so important to maintain.

> ...their temporary conversion to free trade in the 1860's had only been a tactical concession, to be taken back when the depression of 1873-96 made it clear that all countries could not prosper....
>
> High tariffs made return to a territorial policy axiomatic. Access to markets and raw materials would no longer be sufficient because that access was being progressively diminished. Only control of territory provided a guarantee that the market was not captive. [Ref 8, p. 98]

World War I resulted. Today the list of nations that absolutely require access to foreign-owned resources is exhaustively long. Free trade must continue. The only alternative is war. *Maintaining free trade,* and wisely negotiating corrections to deviations from free trade, *is a very real form of avoiding wars.*

The more active role in enforcing peace is through intervention. There is a continuum of involvement regarding intervention. At the beginning end is merely showing the flag; at the opposite extreme is the commitment of large numbers of ground forces. Where on the continuum the appropriate response lies is very hard to determine. As previously discussed, the advantage of having high-tech weapons that can deliver significant results

with little risk of American lives lets our leadership opt for active involvement much sooner than otherwise would be possible.

a. The problem of "free riders"

Other nations of the world, especially the "trading states," accrue benefits from our efforts at maintaining the peace. Trading states, such as Japan,

> have accepted almost complete dependence on the resources and markets provided by the world. No longer is there any disposition to try to conquer militarily the lands, resources, and markets that (it) thinks it might need. [Ref 8, p. 48]

A peaceful world and free markets make it possible for trading states to prosper and serve their citizens. It would seem that some sort of fee ought to be extracted for providing such a valuable service. However, it is absolutely wrong to encourage a trading state like Japan to arm itself to help maintain the peace. If it were to do so it would cease to be a "trading state." It would become again a military-political state capable of seizing resources and markets at will. *Japan failed in its international debut as a responsible power. So, too, did Germany, France, Italy, and Russia. Only the United States has shown that, by virtue of its central tenet, it is capable of carrying arms without using them against the people of the world. This happy fact is offset by the enormous cost of maintaining the forces necessary to enforce peace.*

b. The problem of assessing charges

Assessing a "fee" for providing safe passage through peaceful seas and standing ready to counter military expansion by aggressive states, is an attractive idea. Accomplishing it it much more difficult. As with many other situations, the "shortest route between two points is either

unauthorized or unadvisable." Directly assessing the beneficiaries of our peacekeeping places their assets under our unilateral control. Athens accomplished this with the Delian League, and managed to turn the annual tribute from league members into the basis for its empire. While this might appear to be an attractive idea for "Athenians," it presents a situation ripe for abuse. Instead of extracting annual tribute from beneficiaries, it would be better to bear the brunt of the expense ourselves as our contribution to the general welfare.

Benefiting trading states must, however, make contributions to the general welfare themselves. One form of contribution is to make investments in the infrastructure of developing nations. A trading state does not suffer from the capital drain for military expenditures, and has relatively more capital available. By investing it in developing nations, the world economy grows, which is to the benefit of all. Such contributions must be recognized as being in "repayment" for the peace provided by America. Although not the shortest distance between two points, such a system is mutually beneficial and non-destabilizing.

4. Tyranny of Social and Religious Institutions

The third national objective is to defend men from subjugation by organizations. The most powerful form of organization that tends to overtake the individual is, naturally, his own government. The balance between personal freedom and civil responsibility goes back to the debate between Locke and Rousseau. It appears that there is no "right" answer in all times and for all people. Does Britain extend to its citizens a strong enough right to freedom of the press? The answer can only come from the British themselves,

but we have the duty to press our own experience and "best answer" on the British as an external source of doubt.

a. Fundamental Islam: a special case

Other cultures definitely dispossess their citizens of their natural rights. As already mentioned, Islamic states tend to be more closed and antagonistic towards Western values.

> Modern Islamic reform is often depicted simply as a reaction and response to Western imperialism–political and cultural domination by European colonial powers...By the mid-nineteenth century concern for the internal weakness of the Islamic community was compounded by the threat of subjugation to the Christian West. The political and religio-cultural threat of western imperialism brought forth a variety of Muslim responses ranging from conservative religious militant rejectionism to wholesale western-oriented adaptationism, from *jihad* movements to modernist reform movements. [Ref. 10, pp. 30-1]

There is not any constant set of standards that apply throughout the Islamic world. As the author indicates, states vary from being "western" to being extremely fundamentalist. It is the idea of *jihad* or struggle that poses the greatest problem to those who would oppose or reform Islamic states.

> Given common misconceptions regarding *jihad*, some clarification is necessary. If Westerners are too quick to see Islam as a religion of holy war, modern Muslim apologists have tended to present *jihad* in early Islam as simply defensive in nature. In its most general sense and application in Muslim life, *jihad* refers to the vocation of Muslims to strive or struggle to realize God's will, to lead a virtuous life. This includes the Muslims' universal mission and obligation to spread God's will and rule. As Muslim armies advanced out of Arabia and penetrated new areas, the people were offered three choices: (1) conversion, that is to become a member of the Muslim community with its rights and duties, (2) acceptance of Muslim rule as "protected" people; and, if neither the first nor second options were accepted, (3) battle or the sword. [Ref 10, p. 10]

The "three choices" of the *jihad* do not leave much room for the individual rights of the conquered, as addressed above regarding the first two national objectives. The individual rights of the "soldier of the *jihad*" are even more restricted, however. There was no news report on the Iran-Iraq War that

moved the American people more than the one which showed troops of innocent pre-teenage Iranian soldiers being "sent to Allah."

The appropriate national strategy is to maintain as many ties and associations with these cultures as possible, and try to affect modification of the basic tenets of the society. The Islamic world is not the only place where violence is done to individual rights. Another place, Japan, is of even greater concern to America.

b. Threat of Japan, Inc.

Japan is a land where there is a close orchestration of the rights of the corporations over the rights of the people. The impressive success of the economy of Japan has been built upon the bones of its people. High consumer prices, maintained by legal cartels, deprives the people of fair value for their earnings. Low interest rates, maintained by the government to help corporations raise capital at advantageous rates, also deprives the people of their earnings. Moreover, the modern "triangular trade" arrangement of Japanese corporations appears to deny the social responsibility of paying taxes anywhere. In this arrangement sales are made in the United States with costs shown as being very nearly equal to sales price. Costs are paid to factory subsidiaries in third world Asian lands such as Malaysia, where very large profits are shown, but are virtually untaxed. The profits flow back to Japan through exorbitant "management fees" that show no profits.

Tax avoidance has come under federal scrutiny. The following report summarizes Congressional investigations into the matter.

> Congressional investigators and tax officials reported new evidence today that American subsidiaries of foreign automobile and electronics companies have been underpaying Federal income taxes, with at least $13 billion in back taxes now being sought by the Government...The

> subcommittee staff reviewed 106 Federal income tax returns filed by American subsidiaries of 18 foreign electronics companies in the last decade. "On these returns," it said, "the companies reported $116 billion in gross receipts and paid $654 million, or one-half of 1 percent, in Federal income tax. Over 10 years, only nine companies reported positive taxable income." [Ref. 11]

The highly successful Japanese management practices which were previously mentioned are a source of doubt within America. Our manufacturing processes must be reevaluated because of this example of success. However, wherever Japanese success is built upon the unacceptable sacrifices of the people, the new methods will be rejected. These areas must be made into sources of doubt for the Japanese, and cause them to reconsider "success" at the price of individual freedoms. It is unlikely that America will change such basic tenets, but it is likely that we will adapt and adopt any non-conflicting new ideas. In this way we gain from the experience.

The Japanese culture appears to bow before the Samurai Class of the modern corporation, and all other players are secondary [Ref 12]. This is contrary to our national objective of freeing men from subjugation by organizations. We must counter the unfair marketing and capital-raising structure within Japan *through constant negotiations*. There is absolutely no need to consider war with Japan, since as a trading state it is incapable of waging war, and since we must endeavor to maintain it as a trading state and not a military power. Our differences must be settled at a bargaining table and not on a tableland.

5. In Defense of Free Enterprise

Our fourth national objective is to defend and encourage the creation of private property. As John Locke said, property is the actualization of "life, liberty, and estate." Those who labor but lack the property which they

have created, therefore, are denied a primary right. This is distinct from a general notion of "private property," because it links the creation of the property with the ownership. The pioneer who "wrests the farmland from the primordial forest" obviously owns it. The great-grand children who subsequently lease it to tenant farmers have a less clear claim on it. For this reason, inheritance taxes are generally considered to be fair and reasonable reversions of property back to the society in general. The primary notion, that men must be able to benefit from their own labor, is the engine that drives our society. Prosperity is not accidental, it is the function of work, creativity, and perseverance. Unfortunately, some prosperity is an accident of birth, but this defect can be mitigated if it is seen that the prosperity of one denies the prosperity of others.

As a national objective, this idea underscores the necessity to support land redistribution where colonial practices created a situation where prosperity is not possible for the people who work the land. It compels us to oppose tariff barriers that enrich a few by denying access to fair-priced commodities by the mass of people. But more than anything else, it demands that we oppose the virtual-slavery imposed by communist states.

The national objective to defend and encourage private property is best served in the diplomatic arena. There may arise an occasion when the force of arms can be used to defend the right to property without denying the right to life, but the occasion would be rare.

6. In Opposition to Tyrants

The fifth national objective is to defend men from tyrants. It is also the national objective *observed mostly in the breach* rather than in its

accomplishment. If no man ought to be allowed to impose his will on others, this objective follows. However, we did not oppose with armed force Stalin, Mao, Idi Amin, Castro, Marcos, or Khomeini. We have opposed some dictators, but only because of the threat they caused to our own people. This is because the relative cost of American lives is viewed as greater than the cost of allowing other people to be subjugated. Lives count. So, however, does the denial of rights to other people.

The major problem with accomplishing this national objective is the structure of international law. Sovereignty is not, in international law, something the common individual can have. This is in conflict with our American tradition, and is caused by the fact that monarches wrote international law. For all practical purposes the "sovereign power" of a nation rests with its government or dictator. If we, as the government of the United States, are to deal with another nation, we must deal with these entities. When a nation aligns itself with our purposes, we have tended to support it regardless of the composition of its leadership. This has been very destructive of the accomplishment of our ultimate national objectives.

Short term gains are favored over long term victories. The revulsion for tyrants does not seem to be equally shared by all members of our government. Perhaps the elitist types who serve within our diplomatic corps are not fully acculturated to accept the notion of "individual as sovereign," and accept the idea that some men have superior rights to others. For whatever the reason, we have suffered nothing but humiliation for our support for tyrants.

Since this national objective has not often been served by armed force, it is must remain with the diplomats who have abused it so sorely. When the opportunity arises for the use of arms against a dictator, such as Operation Just Cause, the military must be ready to quickly and thoroughly defeat him. Half-measures are deadly.

7. In Defense of an Open Society

The final national objective is to fight for freedom of the press and speech. For the Pragmatic process to work, the social setting must be greater than one. With two or more individuals able to communicate, ideas are tested and improved. By expanding the social ring to all mankind, it is possible to find the very best beliefs. Although the price of admission is the willingness to risk all beliefs, the price is not too high to pay. Our experience has been very good. Our culture has been able to adapt and evolve as new discoveries have emerged. Most important, the tendency to enforce dogma on others has been mitigated by the ability to rationally debate the ideas behind our beliefs. Consonance does not come immediately if at all. A pluralistic society that tolerates a broad range of beliefs is the result. This is in stark contrast to the three choices of the *jihad:* convert, submit, or die.

The strategy to accomplish this national objective begins with such things as Radio Free Europe, and ends with open trade and commerce. American movies, television, and music probably do more to spread the beliefs commonly held in our society than any other means. As a state, we can argue for the rights of freedom of the press and speech. At times we have been able to provide the platform from which dissidents have spoken to their countrymen. None of these measures require military action. Most of them

do not even require governmental action. We must, however, be ever mindful that the process of cultural melding can generate powerful enmity.

In conclusion, the national strategy to achieve the goals consistent with our objectives is positive. Most aspects of the strategy demand diplomatic negotiations, but some aspects demand military action. Without close examination, it would be impossible to see where some strategies directly contradict others. All players–those with striped pants and those with battle dress uniforms–must understand the whole strategy. America has been and will remain the hope of the world. An era of remarkable opportunity has suddenly opened, and we must move ahead.

III. NATIONAL STRATEGY

The means of accomplishing national objectives is our national strategy. How we plan to oppose external threats, enforce peace, defend both our and others' rights to private property and freedom from oppression is a function of what is possible. We cannot afford to act alone in all of our endeavors. Fortunately, it is not necessary for us to go it alone.

The national objectives of the United States are consistent with most of the people in the world. As we seek to accomplish them, we do not frighten or threaten most people. From among these people we can expect to find allies. Those who feel our national objectives are threatening, either because they represent oppressive regimes or wish to propagate closed societies, are not natural allies. Depending on the degree of perceived threat, these people may become our enemies.

A. IN SEARCH OF ALLIES

The United States cannot achieve security in the world without the co-operation of others. A notable example of this is the North Atlantic Treaty Organization, which has been the primary means of countering the threat of Soviet aggression in Western Europe for the past four decades. In addition the United States has bases located on the soil of foreign nations around the world to effect stationing of military power closer to the areas of expected hostilities. Both of these means entail physical presence of U. S. forces.

A legal basis for presence of U. S. military interest exists with many nations. This type of presence is effected by treaties of mutual defense. Legal presence is less effective than physical presence for obvious reasons: the

requisite moves to act upon treaty "obligations" must conjure adequate political support in both nations before any move to physical presence. For this reason it is much easier to establish treaty obligations than it is to establish physical basing.

There are levels between actual basing and treaty writing. The most important level is that of creating Wartime Host Nation Agreements (WHNA). These agreements detail the lines of command, responsibilities, and actions which each of the participants will undertake in the event of hostilities. Essentially, they form the capability basis of a "war plan" in anticipation of third party aggression. WHNA's counter some of the "fog" and "resistance" of war which Clausewitz identified. When WHNA's are tested in war games and in joint military exercises, they gain trust with all involved and greatly increase the value of the alliance they seek to support.

B. COMMON NATIONAL INTERESTS

No two societies hold exactly the same values and tenets. The national interests of the United States are decidedly general and positive. However, it is possible to have national interests that are not generally held by others or positive in nature. An ancient country that has a traditional enemy is likely to retain desires to punish the enemy for past wrongs. Such interests are undoubtedly unique to the nation and have nothing to do with a positive improvement with the lives of men.

Hence, it is possible for the United States to line up with an "ally" who has a parallel but different set of national interests. The impetus for forming an alliance is often because of an *ad hoc* situation, such as a common enemy. Such a basis, as Europe discovered when facing the common enemy of

Napoleon, is not necessarily enough to sustain an alliance. Although the temptation is strong to muster together all who would oppose a common enemy in the belief that a strong alliance can be formed, history indicates that at some point—often well before a decision on the battlefield is won—the alliance crumbles. Therein lies the distinction between natural allies and allies of convenience.

1. Natural Allies

A people who have mutually held aims can be a natural ally. If there is no mutual benefit, not even millions of dollars can buy our way into a nation to, for instance, establish basing. This fact has been made clear. Despite the notion that we pay "rent" for maintaining our forward bases in a number of countries, we cannot view the relationship simply as leasee-leasor.

In hearings before the House of Representatives, General Graves made this point particularly clear. His analysis under questioning is as follows:

> I cannot deny the notion that we are having difficulty about rent; that is, that the foreign government views it as rent. But I guess my attitude is, even if it is a busted flush, we should not ever admit that. The reason I say that is that we have had the experience that if there is not a view of mutual benefit, you cannot pay to stay there. Witness Torrejon in Spain.
>
> So unless you maintain the concept that it is to the mutual benefit of the two countries, you are not going to be able to buy it. So that should be our thrust. [Ref. 13]

An ally cannot be bought. Although negotiations with any of the host nations must deal with the topic of money, as General Graves says, money is not the heart of the matter. The attitude of a negotiating host may appear or even be solely concerned with maximizing their cash income, and the position that mutual benefit is paramount "is a busted flush." Yet it must be recalled that the genuine party which is being represented, the people of the host nation, are distinct from the government. It should surprise no one that

the interests of the people, while only indirectly represented at the negotiations, will ultimately prevail.

Therefore the natural allies of the United States are those peoples who hold very similar national objectives: oppose external threats, maintain peace, defend the people against tyranny and organizational subjugation, and defend private property, free speech and free press. For them alliance with the U. S. is a natural and comfortable action.

2. Ad Hoc Allies

There are other reasons for a nation to form a close relationship with the United States. One reason is an overwhelming economic need. Saudi Arabia, for instance, depends for its existence on the sale of oil to the West. This fact drives Saudi Arabia into a political relationship with the United States. The congruence of national objectives of the two nations is far from perfect. Should another military power arise which could satisfy Saudi Arabia's needs, the alliance with the United States could end in a moment.

France is a nation with a particularly unique set of national objectives. Despite a shared intellectual heritage and political history, the United States and France have certain objectives that actually are opposed to one another. France desires to be an independent force with a unique culture and language. The United States is *de facto* the predominant force, and has no particular regard for preserving its present culture or language. In the major objectives, however, there is congruence and, predictably, the two nations usually fall out on the same side in important matters.

The two states discussed above serve to illustrate the fact that many nations are other than natural allies. One large category of states exists that

cannot be considered natural allies. These states often are those where corruption rules the government.

This phenomenon has been observed in of former colonies of Spain and has been called the "Spanish heritage." The heritage is to have a government which is the means of preserving an oligarchy of corrupt interests. At the very root of such a culture is probably the medieval church which provided sinecures, or jobs with no work but some pay, to favored people. It became enmeshed with the economic theory of the days of colonialism—mercantilism—and formed a peculiar system of government which exists today in many parts of the world. This rather harsh summary comes from a man who has served as an economist for the General Agreement on Tariffs and Trade, as managing director of his nation's central bank, and is a member of the United Nations Committee for Development Planning: Hernando de Soto.

Peru, as a good representation of this kind of state, is a nation that is designed around mercantile economics. Whereas the original mercantilism required a homeland and colonies, with the homeland importing raw materials from the colonies and the colonies receiving all manufactured goods from the home country, in Peru the process is carried out between the city and the countryside. [Ref. 14] The means of enforcing this system on the peasants is the central government: it generates laws and prohibitions in such numbers and complexity that rural people cannot even move to the cities, much less escape the economic oppression in the countryside.

Finding an ally in such a nation is hard to imagine. External threat is about the only national objective that could generate a basis for doing so. Cuban and Soviet support for wars of liberation in fact provided a basis for

alliance. American self interest, expressed by the establishment of the Western Hemisphere as a private sphere of interest, had the unfortunate consequence of defending and perpetuating the status quo. For the peoples of Latin America, the status quo is oppressive, tyrannical, and without hope of achieving private property. It is decidedly "un-American." Ironically, it is Japan, with its ready cash to develop industries, that may move these nations beyond their quasi-mercantilist stage.

Unfortunately, Spanish colonies were not restricted to the new world. The Philippines are also in this category. The United States is in a double-bind in the Philippines because of the large investment we have made in military basing. It is impossible to maintain a close relationship with the government and simultaneously live up to our own national objectives with regard to the people of the Philippines.

It would be unfair to suggest that corruption is a Spanish invention. It certainly is not, especially in the orient. However, it is necessary to point out the inimical nature of systematic corruption and American national objectives. In the days of East-West confrontation, we could find compelling reasons to form alliances with many nations. Today, however, we must reexamine these relationships and break off many of them.

C. INTERNATIONALISM: THE NEW UNITED NATIONS

In 1990 the United Nations has risen as a potent and effective political entity, something very much like it was intended to be. For many this is a startling development. The seminal paper on the subject of U. N. fecklessness gives a hint that this ought not be surprising [Ref. 15]. When the superpowers disagreed over an issue, it was usually not referred to the U. N. When Cold

War issues were referred to it, the U. N. failed to settle any conflict. However, when the superpowers were in agreement the U. N. had a good record of settling conflicts. Today the list of "superpowers" is somewhat shorter. The Soviet Union is withdrawing its standing objection to any and all American interests. This policy is delineated in the *new political thinking* that allows all nations to have legitimate interests.

1. Conflict with National Interests: Law of the Sea Convention

The only discernible limitation to the powers of the United Nations is the conflict between vital American interests and international desires. Obviously, this is an important area. The sovereignty of a nation is what sets it above other organizations. In the lexicon of international law, only states have sovereignty, despite whatever beliefs we may have about individual people being the true sovereigns. It has been in the past an unthinkable act for a state to surrender its sovereignty to another or to an international organization. Doing so, surrendering sovereignty, curtails the ability to act in the interests of one's citizens. It is a very serious subject.

The particular conflict between the United States and the United Nations which is presently outstanding is the Law of the Sea Convention of 1982. More specifically the conflict is over Article 137, paragraph two, which reads:

> 2. All rights in the resources of the Area (the international seabed) are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The minerals recovered from the Area, however, may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority. [Ref. 16, p. 1340]

This is in direct conflict with previous customary law of the seabed, which allowed minerals to be extracted by individuals and kept as private property.

[Ref. 16, p. 1342] The traditional role of private property, as discussed elsewhere in this thesis, is that free and equal men invest their labor with the earth and earn private title to possessions previously deemed to be held in common.

The difference between allowing an enterprising man to find and develop minerals and then taxing his profits to help support the society in general, and proclaiming primary right to the minerals which he must "buy" from society may not appear great. However, it is substantial. If the precedence stands, then could not all mineral wealth belong first to "mankind in general, and the United Nations in particular" also be held to be so? In fact fresh water, arable land, and other desirable commodities could also be "seized and redistributed" in the name of mankind.

However, the greater problem is not some imagined resource grabbing, but the erosion of the status of man which such an interpretation implies. Man is no longer free and equal, but subservient to "mankind." Such a notion is entirely inimical with American values.

The Law of the Sea Convention of 1982 has, therefore, generated an imperfect document. It is not, however, reason for the United States to abandon the highly desirable goal of helping the United Nations to become a vehicle for common security.

D. SUMMARY OF OPTIONS

The United States can choose to pursue its national interests on its own, or in the company of others. Since we cannot afford to stand entirely alone, we must find appropriate allies and share with them the enterprise. The nations which are very closely aligned with our own national objectives form natural

allies. Their numbers are not large, however. Great Britain, Canada, Australia, until recently New Zealand, and some European nations probably exhaust the number of natural allies.

In addition to these nations are those who look after interests that are not entirely congruent with ours. Many of these nations have been allies in the past, owing to the overarching menace of a now less threatening common enemy: the Soviet Union. Today, for this reason, their number is much reduced. It is necessary to choose from among these nations the greater part of our allies. Wisdom is required, since if we choose nations that oppress their people, encourage violence abroad, or deny free speech and press, then we undercut our own interests as we try to build a structure to defend them.

The United Nations, and in particular the U. N. Security Council, has emerged as an improving vehicle for providing common defense. If it can act responsibly and promptly, then there is no need for any state to stand as a regional arbitrator of military defense. This potential has recently arisen, and it is treated in a later portion of the thesis.

IV. BUILDING A COMMON DEFENSE

A. COMMON DEFENSE

The most sensible approach to accomplishing our national goals is through cooperation with allies. Common strategy, tactics, and equipment make common defense possible. One essential component of allied defense is created by providing common equipment and common logistics support. The primary means to this end is Foreign Military Sales (FMS). Allied and merely friendly nations have, through FMS, access to well developed weapons systems complete with technical documentation and spare part support.

Commonality of equipment and reliance upon the United States for logistic support forms bonds which should lead to actual alliance during times of war or crisis. The following is an analysis of the FMS system based upon first-hand experience. It is limited to a single client nation and to naval support. Nevertheless, it provides important lessons regarding FMS.

B. BACKGROUND INFORMATION

An FMS client can order almost anything that the U. S. supply system carries. To assist him in finding the material he needs, the FMS system provides the complete Identification List (a huge microfiche file which describes the characteristics of every item assigned a national stock number), a Master Cross Reference List (which converts all known manufacturer's part numbers into current stock numbers), and technical documentation for the major equipment purchased from the United States. Technical documentation is basically the operator's technical manuals, which show how to maintain the

subject piece of equipment, how to break it down into its components without damaging it, and what part numbers are assigned to each part. Additionally, an Allowance Parts List for each piece of equipment enumerates all the parts expected to be used for corrective and preventive maintenance and cross references them to stock numbers.

1. Beginning with the Basics

The problems begin at the deck plate level, with the maintainer of the equipment. English is still not a universal language, and even those who have learned English well enough to read and understand college-level writing often find their understanding insufficient when it comes to U. S. technical documentation. By way of illustration, consider the two following full descriptions:

1. VALVE CHK STP GLB 1.00IPS 400PSI SBU BRZ
2. VALVE CHK SWG 1.00IPS 400PSI 1500FG F UN BRZ

Both of these valves are one-inch (iron pipe size), both withstand 400 pounds per square inch of pressure, and both are check valves. Both are in fact installed in the same air conditioning system. [Ref. 17] Yet one is a globe-type valve, and the second is a swing valve, and more important, one is sweated (welded) into the system while the second is attached by a union connection. A technician unable to understand all of the nuances of these cryptic descriptions will almost invariably order replacement innards for the wrong valve or a replacement valve that cannot be installed. Except in rare instances no further technical documentation is provided, since in U. S. channels the technician is expected to understand how to overhaul a simple valve.

The above example is decidedly "mild." Even seasoned veterans are confounded by nomenclature such as FAN VANAXIAL for a portable air blower, and the exact nomenclature must be known before the repair parts listing can be found. Simply put, our "technical English" is not English at all. It is a specialized jargon beset by abbreviations that defy translation. No Rosetta Stone exists in most foreign languages for breaking the code.[2] The technicians simply do their best. The result is a high probability of ordering incorrect repair parts for the job. This inconvenience becomes compounded when the delay to fill orders is encountered.

2. Playing the Game with Half of a Rulebook

Since clients are given "full membership" in the U. S. supply system when they become FMS users, they are expected to understand all of the workings of the system. This is unrealistic. As an example the U. S. Navy uses Cognizance Symbols (COGs) to preface all stock numbers. These COGs help flag special requirements and indicate who is the state-side manager of the material. One COG is 2F, and it indicates that the item is specially managed, and requires the Chief of Naval Operations' (CNO) approval prior to ordering. When the 2F precedes the stock number of a complete fire control system, such an onerous requirement makes sense. When it precedes the stock number of a hydrophone (which is the underwater microphone that forms part of a sonar system), it is less understandable. Hydrophones fail when they are scratched, flooded, banged up, or develop corroded electrical connections.

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[2]I, myself, set out to provide such a reference, by translating into the local language the technical abbreviation listing which prefaces the standard Coordinated Shipboard Allowance List publication, but completed only 10% of the task during my tour of duty.

They are regularly replaced, yet each requisition must be preceded by a formal request for release of the item. If the message to the CNO with a copy addressed to the hydrophone manager is not in hand when the requisition is placed, it is automatically cancelled. Period. Any subsequent requisition for the hydrophone will similarly be cancelled unless the CNO message has been sent. This "2F" trap is well known to American supply types, but led one nation to fail to receive a single replacement hydrophone for their American sonar systems despite numerous attempts for over a number of years. The frustration that ensued is understandable. It must be noted that the U. S. Navy's International Logistics Office provides coordinators and dedicated personnel to assist FMS clients. Nevertheless, many problems and misunderstandings occur.

A similar problem arises when items which have 7H COGs[3] are in need of replacement. The broken part, technically referred to as the "carcass," ought (for U. S. users must) be turned in for repair. If the maintenance technician does not know this, he will throw away the carcass and incur a "new" refurbished part at a cost up to ten times higher than the cost of "trading in" the carcass. When carcasses are discarded, the entire population of ready-for-issue and awaiting-repairs parts is diminished. This creates a problem for all users of the part, and is a cause of critical shortages.

[3]This is a simplification, since it is not the COG which determines whether an item is repairable or not, but the Material Control Code that follows the COG, e. g. 7HH. Any code of H, E, X, Q, or G indicates a repairable item. However, the vast majority of all U. S. Navy repairables are under the 7-COG managers.

a. Repairables as a special FMS problem

The system of having items which are deemed "repairable" turned in, repaired, and returned to the stock of issuable parts is a major concern of U. S. Navy support. The list of repairable items continues to grow, and the necessity of tracking not only new items, but also carcasses is governed by special instructions. One principle manual is the Navy Repairables Management Manual [Ref. 18]. In addition to describing in great detail how U. S. forces must handle repairables, the manual mentions the simple fact that:

> Each FMS case and Depot Maintenance Interservice Support Agreement (DMISA) will constitute a separate, specific agreement made with the foreign government or other service. It is separately funded and assumes the same status as an individual contract. [Ref. 18, p. IX-2]

This means that Foreign Military Sales clients cannot utilize the standing system of exchanging broken repairables for rebuilt repairables, paying only for an "average repair cost." Instead the client must establish a case (contract category) to have each repair individually contracted. Finding the correct facility to estimate the cost of the repair, delivering the carcass to the facility–which is generally a division of an American corporation–and paying for the repairs is expensive and time consuming.

Repairable parts are generally such things as circuit cards and power supplies. In more modern electronic equipment, repairables may constitute 80% of the parts in the gear. The vacuum-tube-technology of the past did not involve nearly so many repairable items. Since many FMS clients have only been exposed to vacuum-tube-level technology, they can quickly be overcome by the "repairables game" when they move up into more modern equipment.

b. Attempting to utilize the repair option

In addition to the problem of allowing the deck plate level technician to make the "repair or replace" decision by fiat, the logistic support of the gear itself necessarily suffers. In the first place if the repairable is to be repaired, it must be packaged and sent to the repair facility, where it is either immediately repaired or an estimate of the cost of repair is made. There is a standard clause that allows immediate repair at a price not to exceed the price of a new item, should the client desire. The time involved in shipping, awaiting repair, being repaired, and being returned has averaged 1.2 years for the client. However, this does not include those unfortunate incidents such as when $88,000 of repairables were misdirected to a Boston warehouse and were auctioned off to pay for the unpaid (unknown) warehouse cost.

C. AN FMS CASE STUDY

For whatever reasons, lengthy delays occur for FMS orders. This observation is based upon data from a major FMS client nation where the author was stationed as an exchange officer. The following data is not conclusive, since it is drawn from only one client, and is directed exclusively at mandatory turn-in repairable merchandise. Nevertheless, it is important documentation of a serious problem. Although the data consists of recorded requisitions, and "FMS implementation records, such as [requisitions]...are unclassified," [Ref. 19, p. 5-8] "groupings of data" may show a complete picture which must be classified due to their presumed effects on readiness. [Ref. 19, p. 5-9] To avoid showing too accurate a picture of the client nation's turn-over of repairable spare parts, the data is shown only as frequency distributions, and no indication as to how long a time period the data covers is given. Neither are

values entered on the vertical axes of figures which might indicate how great the client relies upon repairable parts.

1. **Establishing the "Norms" for Supply Support**

In order to put the data in perspective, Figure 2 shows the methodology of supply support which the U. S. Navy applies for activities located outside of the continental United States. [Ref. 20]

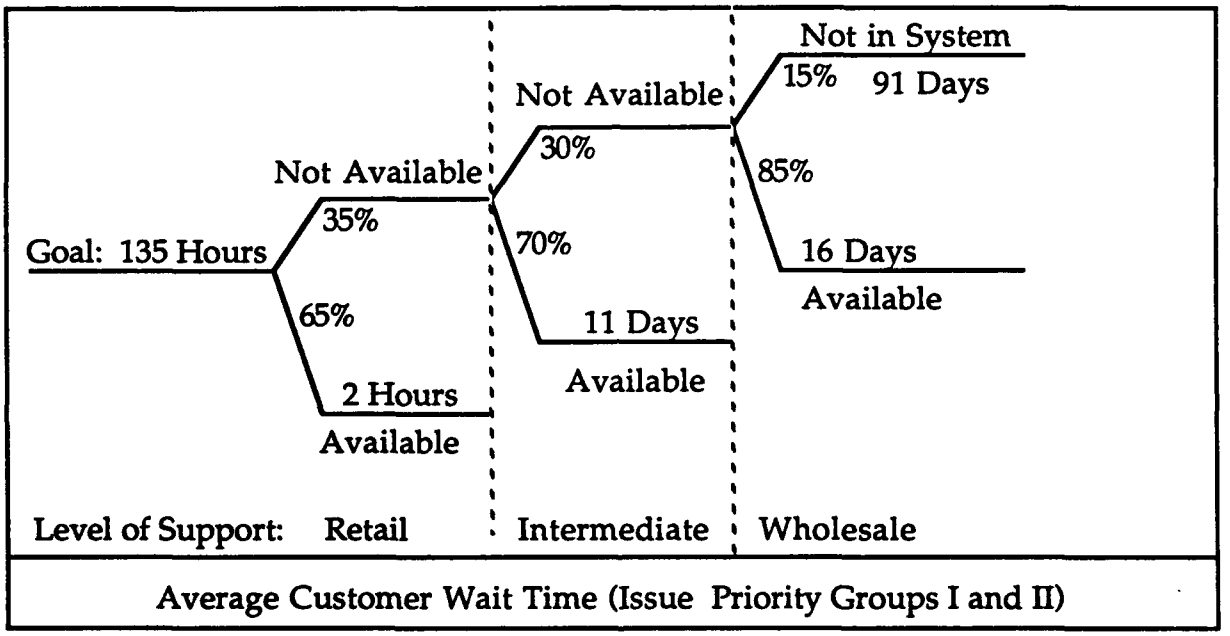

Figure 2. Logistics Support Structure

This indicates how U. S. Navy logistic support is accomplished. Ships are supposed to normally carry and have on hand stock to satisfy 65% of all demands. For the remaining 35% of demands, an intermediate level (such as a forward supply point or supply ship) will provide 70% of the unsatisfied demands within 11 days. The remaining 10.5% (35% times 30%) of the demands will be satisfied from wholesale stocks or purchased from the industrial base. The stated goal is for only 1.575% (35% times 30% times 15%) of all requisitions

to end up being backordered by the system, and then to be delivered on average after only 91 days. The goal is to have on average all repair parts delivered within 135 hours.

2. Operational Availability

This number, 135 hours, is very important when the concept of "Operational Availability" is examined. Operational availability, usually written as A_O, is defined by the simple equation:

$$Ao = \frac{UPTIME}{UPTIME + DOWNTIME}$$

to be more precise, the following version of the same equation breaks down the "downtime" term into its components: [Ref. 21]

$$Ao = \frac{MTBF}{MTBF + MTTR + MSRT}$$

Here "uptime" is defined as the mean time between failures (MTBF) of the equipment, and the "downtime" is divided between the mean time to repair (MTTR) the equipment and the mean supply response time (MSRT). [4]

A piece of equipment can achieve an A_O equal to 1 only if it never fails. If, when it fails, it can easily be repaired with repair parts that are readily at hand, then it can have a very high A_O, approaching 1. Long delays in supplying repair parts, however, will drag down the value of A_O. For a military planner a low A_O is bad. For example if an aircraft type has an A_O of 0.5, then the planner can only count on having one half of the aircraft available for use.

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[4] A_O is more generally defined as being the quotient of mean-time-between-maintenance (MTBM) and the sum of MTBM and mean-down-time. This would also include scheduled preventative maintenance [Ref. 22]. However, restricting the term to corrective maintenance, i. e., MTBF, is both convenient and errs on the conservative side when drawing conclusions from the data.

Missions which require ten aircraft demand that twenty aircraft be purchased.

Purchasing equipment with high reliability (long MTBF) is important. Designing the equipment so that it is easily maintained (short MTTR) is important. But for a foreign client, these parameters are already established when they purchase American equipment. The missing element is the mean supply response time. In order for U. S. forces to operate as they are designed to, MSRT must remain at or near 125-135 hours. If U. S. equipment in the hands of foreign clients is to operate as it does for U. S. forces, then the MSRT must also be near 135 hours. This provides a frame of reference for the data which follows.

3. Observed Leadtime for FMS Orders

The average time to release a mandatory turn-in item from the U. S. supply system to this FMS client was 269.9 days. For only issue group I and II requisitions, this time was reduced to an average of 237.5 days. This is a conservative figure, since it does not include any transportation time, for multiple requisition it assumes all items are shipped when the first one is released, for requisitions outstanding at the time of the study accepts the estimated delivery date, and for outstanding items with no estimated delivery date assumes delivery within 30 days. In actuality, transportation from the inventory control site to a freight forwarder plus ultimate transportation to the client government and thence to the customer ought to be included in the "mean delivery time." The following graph, Figure 3, depicts the number of days for requisitions to be released for shipment.

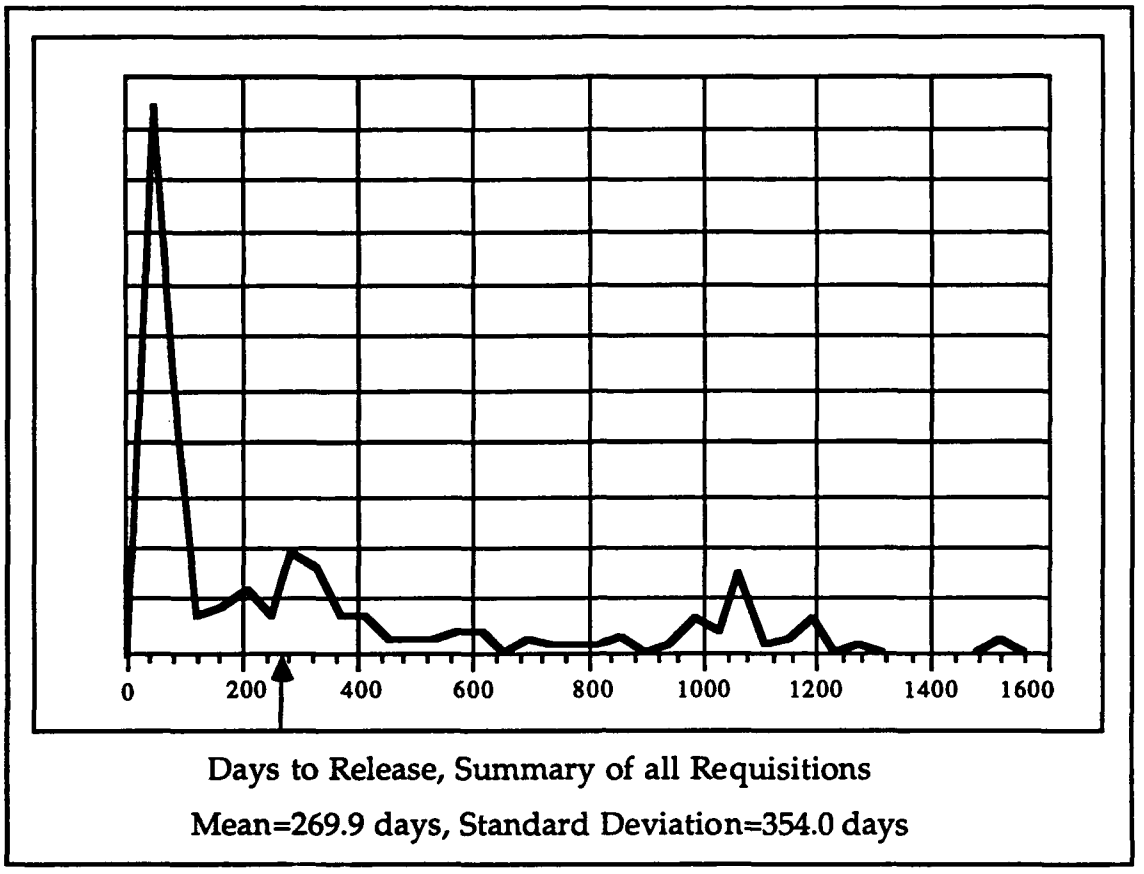

Figure 3. Delivery Times, All Requisitions

FMS support is designed, according to the Security Assistance Management Manual, to begin at the shipboard level with a 90 day stock of repair parts, and at the shorebase level with a 200 day stock of parts. This is similar to how the U. S. Navy maintains support levels for its own forces. For ships stationed outside of the continental United States, this methodology necessitates having the portion of stock demands with priority 3 or 6 (which is to say with Issue Group I or II)–which must be filled from wholesale stock or from new procurement–within 27.25 days. This time includes delivery to the ultimate customer.

As indicated, FMS issue group I and II requisitions take almost nine times longer to be released for shipment. In these calculations transportation time for the foreign client is ignored, it will be remembered. It becomes impossible for the U. S. calculated 90-day and 200-day supply levels to keep up with the repair part demand. The normal method of replenishing stock is to use issue group III priority (Pri 13), and to order in multiple quantities. When the client uses this priority and orders more than two items, the release delay grows to an incredible 383.9 days on average.

4. Impact on Supply Support System

It is not necessary to build a queuing model to determine what happens to the client's supply support system: for a short while it copes with the slow replenishment rate, and then it is sucked dry like a soda straw collapsing under the demand pressure. As the retail and intermediate support levels collapse, the "sources of rapid support" are eliminated. Whereas the methodology calls for 89.5% of all demands to be met at the retail and intermediate levels, with stock exhausted and backorders piling up, the collapsing system shifts to more and more dependence on the U. S. based wholesale supply source. The average customer wait time grows until it is equal to the U. S. delivery time. For these calculations, rather than using the overall average time, the issue group I and II average of 237.5 days or 5700 hours, will be used. The logic behind this is that if the client is requisitioning to support an unfilled demand, he will use this higher level of priority.

Returning to the idea of operational availability, A_O, it is now possible to calculate the effects of this greatly increased mean supply response time (MSRT). The formula to calculate A_O has only three terms: MTBF, MTTR,

and MSRT. To achieve some level of A_O, such as 0.95, it is possible to vary MTBF and MTTR while holding the level of MSRT at the goal of 135 hours. At one extreme we will use a mean time between failures of 100,000 hours (over eleven years), and solve for MTTR:

$$Ao = 0.95 = \frac{100{,}000}{100{,}000 + MTTR + 135}$$

solving,

$$MTTR = 5128$$

At the other extreme, using a value for MTTR equal to zero, it is possible to solve for the mean time before failure that is required to result in the same 0.95 value for A_O.

$$Ao = 0.95 = \frac{MTBF}{MTBF + 0 + 135}$$

solving,

$$MTBF = 2565$$

In fact there is an infinite number of possible values of MTBF and MTTR that will result in $A_O = 0.95$ when MSRT is held to 135 hours. These possible values are plotted below in Figure 4.

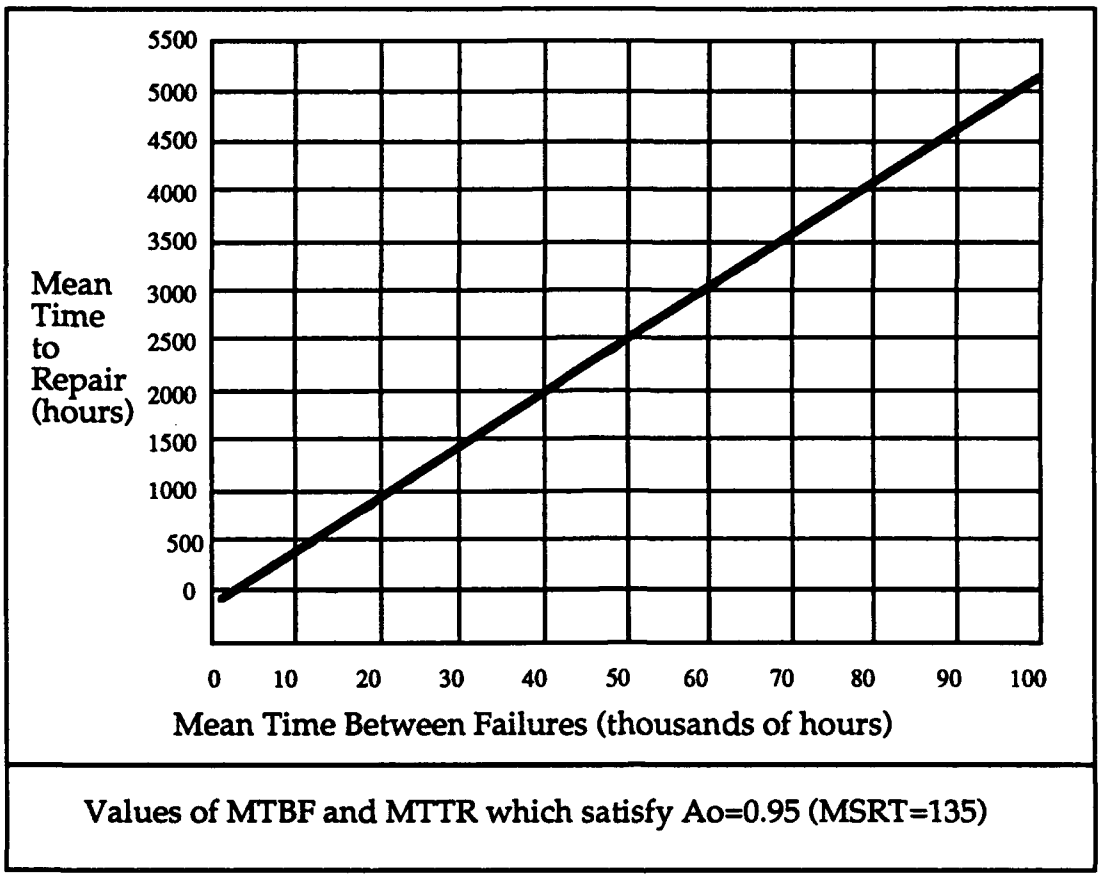

Figure 4. Relationship of MTBF and MTTR

Having established a broad range of values of MTBF and MTTR which satisfy $A_O = 0.95$ and MSRT = 135, it is now possible to use these values to see how an increase in MSRT effects A_O.

In the first case, using MTBF = 100,000 hours and MTTR = 5128, the following value for operational availability is generated:

$$Ao = \frac{100,000}{100,000 + 5,128 + 5700} = 0.896$$

This is not a very large reduction in operational availability, but since it requires an average of over eleven years of uninterrupted service, it must be understood as an extreme value.

In the second case, using MTBF = 2,565 hours, and MTTR = 0, the following calculation results:

$$Ao = \frac{2,565}{2,565 + 0 + 5,700} = 0.286$$

This is a drastic reduction, and means that only 28.6% of the time will the system be available for operation.

Plotting all values for A_O that result from the higher MSRT, Figure 5 is generated:

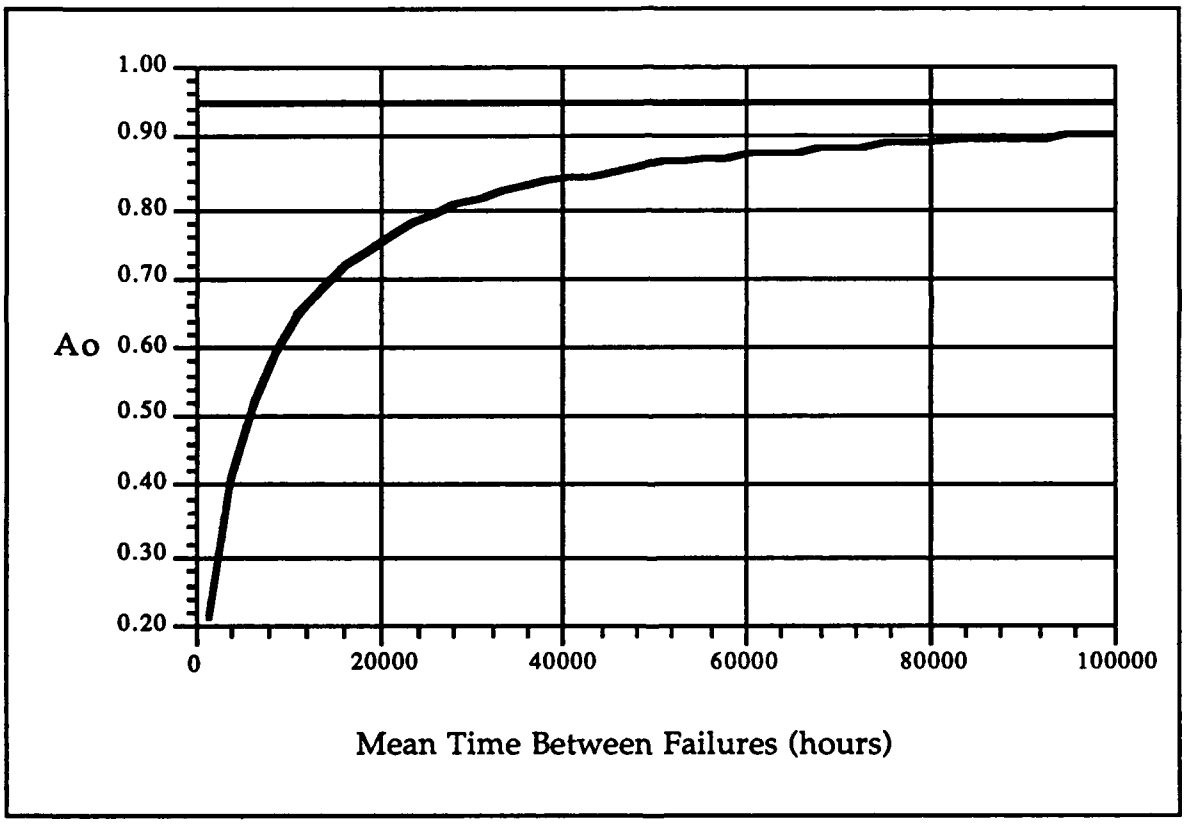

Figure 5. Relationship between MTBF and A_O

This graph is interesting because it shows the non-linear relationship between values of MTBF/MTTR and an increase in MSRT. Where very large values of

MTBF (and MTTR associated with those values) are used to recalculate A_O with the increased MSRT, only a modest decrease in A_O occurs. Where small values–here values of MTBF under 5000 hours–are used, a drastic reduction in A_O is generated. The question is which part of the curve is relevant. Being realistic, we do not produce systems that operate for ten years without needing corrective maintenance. Even 5,000 hours–or about 208 days–is a bit long. Our maintenance philosophy, as evidenced in the F/A-18, is to improve operational availability by making the mean time to repair as short as possible. Innovative rack mounting of components allows quick access and rapid repairs. This strongly indicates that the relevant part of the curve lies around the 5,000 hour mark. In this region A_O is reduced, as a result of increasing mean supply response time from 135 hours to 5700 hours, to around 0.46.

5. Impact on Military Planning

Operational availability for each of a ship's systems have to be combined to determine the ship's A_O. For instance, if a planner wants to know the probability that a ship will simultaneously have a functioning main propulsion plant, fire control system, weapons system, communications system, and close-in self-defense system, he has to combine the individual A_O's to generate the probability. In the case of a warship, with A_O's of 0.95, the probability is 77%. (The value for A_O of 0.95 is arbitrary and is only used for illustrative purposes.) In the case calculated above, with A_O's of 0.46, the probability of finding all five systems functioning is only 2%. The hard truth of logistics is that if it is badly handled, it is more deadly than any enemy's bullet. In this case even if the military operator is willing to accept having only the propulsion plant, fire

control system, and weapons system functioning, he still has less than a 10% chance of finding them so.

Before proceeding it is important to reiterate the limitations of these figures. First of all, the requisition delivery times are taken from only one area: repairable items. Repairables are as a rule critical items, the loss of a single one results in the non-operability of the equipment. Less critical items, such as gaskets, are also included in the average customer wait time figure. Less expensive and more readily available repair parts would tend to lower the average wait time. Secondly, the data is related to a single FMS client nation, not from all clients or even a representative cross section. Third, the generation of data to illustrate how A_O varies with an increase in mean supply response time has been arbitrarily based on an initial value of 0.95. Other initial values could be chosen, and would result in different subsequent levels for A_O. Nevertheless, the analysis demonstrates that significantly increasing leadtime has a negative, possibly calamitous, impact on operational availability.

6. Sources of Leadtime Growth

The observed logistic support is at odds with the "printed word." The Security Assistance Management Manual states that:

> Normally, foreign military sales of materiel are made only when the DoD has made or has approved plans to assure logistic support for the expected service life of the equipment. This includes follow-on spares support for equipment sold through FMS under established Cooperative Logistic Supply Support Arrangements (CLSSA's) which will be afforded the same priority as that provided equivalent U. S. forces performing a comparable mission in the same geographical area. For other follow-on FMS spare parts cases, the normal lead time from procurement will apply. [Ref. 15, p. 6-9]...Under normal circumstances, the MILDEPs [military departments, e.g. U. S. Navy] will fill security assistance materiel requirements from production on a first-in, first-out basis, utilizing normal production lead times, unless the DoD can meet urgent requirements from earlier production without an undesirable effect on the combat readiness of U. S. forces. [Ref. 19, p. 6-7]

However a caveat is added:

> Material being procured or stocked specifically for FMS may be diverted to meet higher priority foreign requirements or urgent needs of U. S. Forces with the prior concurrence of the Director, DSAA, who will, as appropriate, obtain policy guidance within the USDP. [Ref. 19, p. 6-7]

The defense bureaucracy is like an onion, it is comprised of many layers. The next layer down, for U. S. Navy supply support issues, is the Naval Supply Systems Command. In the NAVSUP Publication 541, Security Assistance Manual, the same topic is addressed in somewhat different terms:

> Under normal circumstances, security assistance material requirements will be supplied from commercial production unless DOD can meet such material requirements from inventory without an undesirable impact on the combat readiness of U. S. forces. [Ref. 23]

There is no mention of treating FMS clients "with the same priority" as comparable U. S. forces. There is, above all, no commitment to provide logistic support at a level anywhere comparable to U. S. forces. It will be recalled that less than 2% of U. S. customer's requisitions are expected to be filled from commercial production, yet for the FMS client it is the "normal source of supply" if using regular stock has "an undesirable impact" on force readiness.

Compare the following two graphs, Figures 6 and 7. The first shows the lead times involved in all priority 3 (issue group I) requisitions and the second for all priority 13 (issue group III) requisitions.

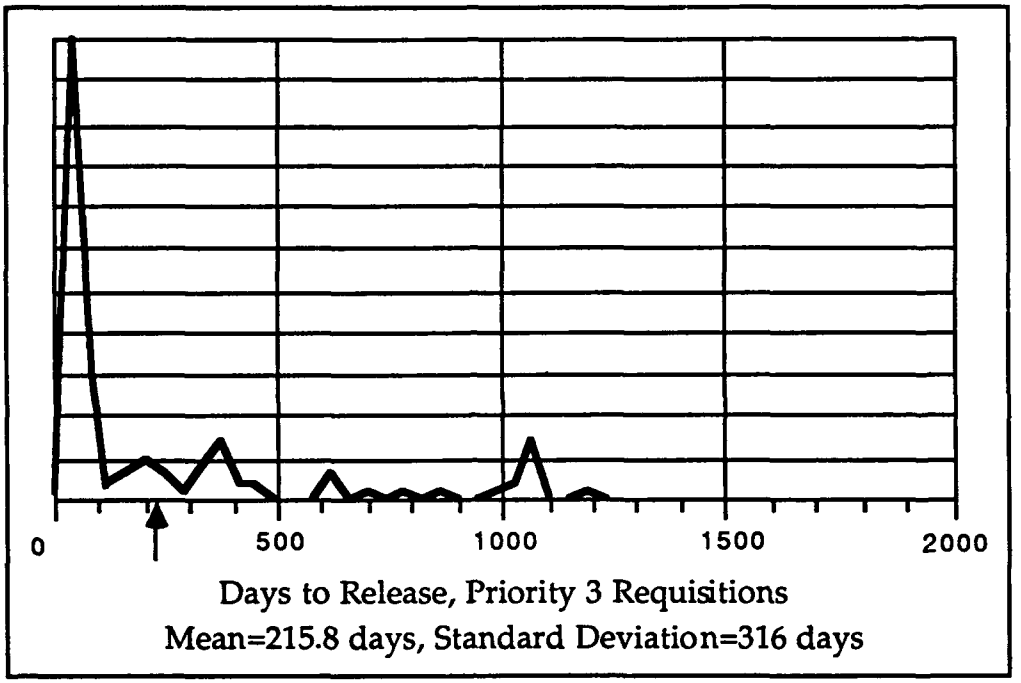

Figure 6. High Priority Item Delivery Times

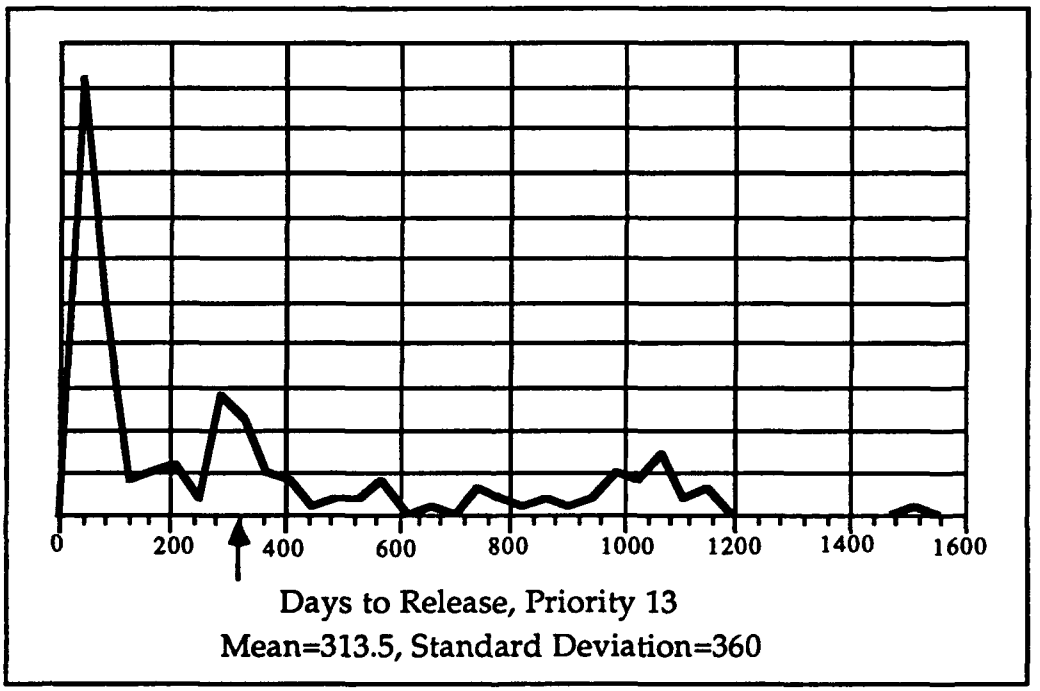

Figure 7. Low Priority Item Delivery Times

The distributions are similar. Both have a large percentage of immediate deliveries, which can be presumed to be from on-hand stock. Then a second "population" of requisitions arise at about the one-year point. This corresponds to the lead time associated with commercial procurement. A third "population" is shown around the three-year period. This may represent special problem requisitions that require retooling. As one would expect, the higher priority requisitions received better response times.

The following two graphs, Figures 8 and 9, indicate a more dramatic change in the pattern of lead times. The first is a summary of all requisitions for a quantity of one each. The second summarizes all requisitions for two or more each. These summaries include all priorities of requisitions.

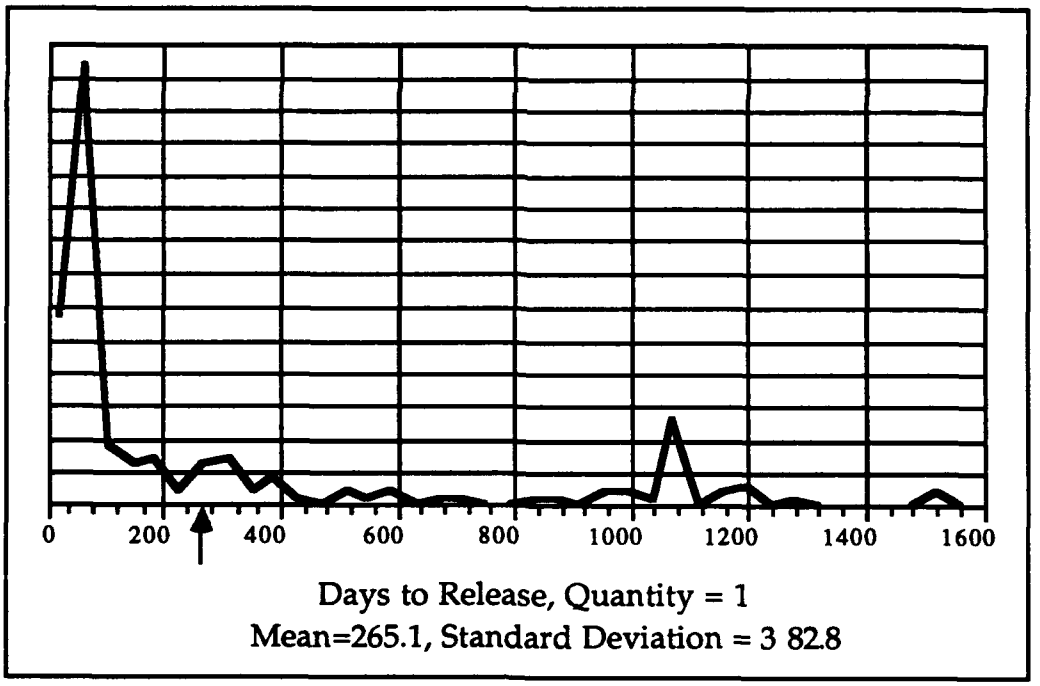

Figure 8. Delivery of Requisitions for One-Each

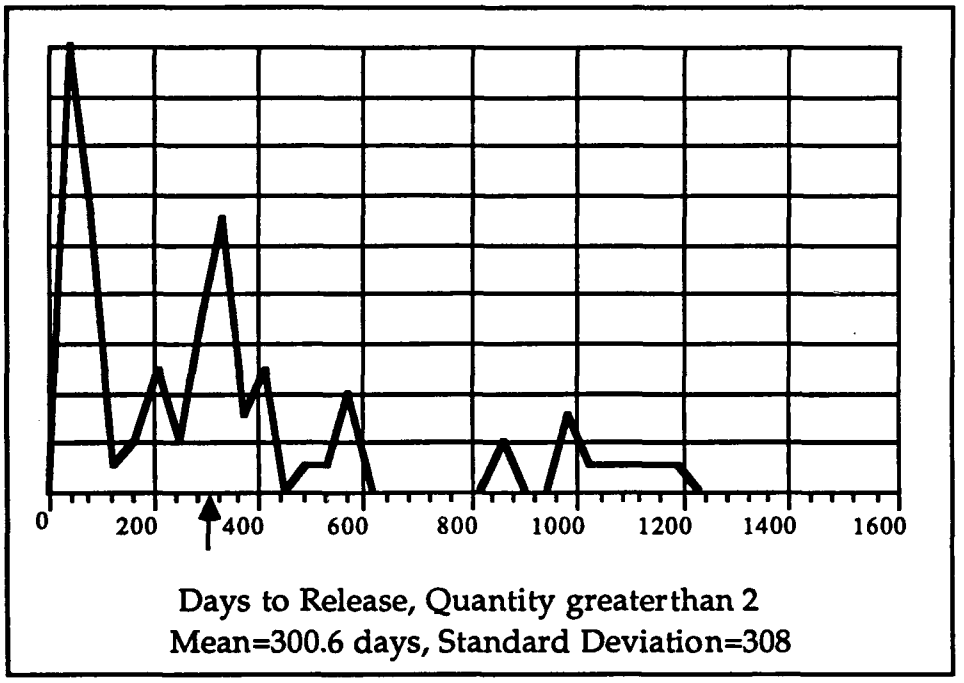

Figure 9. Delivery of Multiple Item Requisitions

It is evident that the key element in determining if a requisition is going to be delayed is not its priority, but its quantity. When only one part is required, the likelihood of prompt shipment is very high. When three or more are required, the "population" around one-year grows rapidly. These are requisitions that are probably sent to be procured from commercial sources.

This can be more readily seen when one views a typical inventory model. The Figure 10 illustrates how, as stock is drawn down by U. S. and FMS client demands, it approaches a "reorder point." Once this point is reached, the manager of the material must act to place a new order that will refill the stocks before the remaining balance is exhausted. For the typical customer (or perhaps only for the U. S. customer) the inventory may never reach zero: replacement orders flow in to restock before any customer is faced with a stockout situation. In point of fact, this is difficult to achieve, and some low

level of stockout is usually allowed. The NAVSUP goal indicates that of the Issue Group I and II requisitions unfilled at lower echelons of the system, will find on average 15% of the time "the cupboards bare." But these "stockout" requisitions are to be filled within 91 days. This is much shorter than the actual order leadtime, and indicates that they will be filled as soon as new stock arrives. This is very different from being made a part of a new order, which is to say part of a new government contract, that must go through all the usual steps of invitation to bid, acceptance of bids, award of contract, and delivery of product.

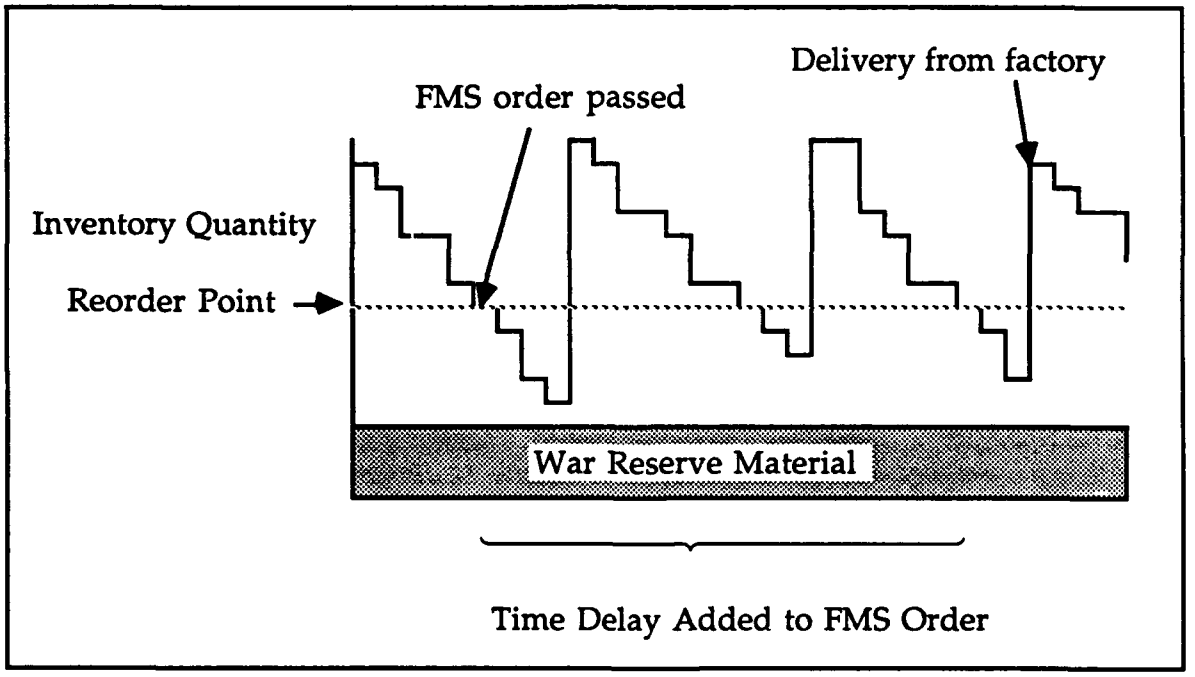

Figure 10. Graphic Depiction of Leadtime Growth

The graph indicates that several orders are outstanding at the time the FMS order is received, but that the FMS requirement is passed to the factory along with the next restocking order and must await the full order leadtime. This is clearly borne out in the previous figures which show several populations of

order release times. As the size of an order grows, the likelihood of being passed increases. The result is a separate population of orders that are not filled for about one year. If FMS orders were in fact held for the next delivery, the resulting distribution of delivery times would not have this separate population.

7. Expediting Requirements

There is one final area which has not been discussed: special management of important requisitions. Because only a few requisitions are at any one time "hot," it is possible to afford them special treatment. Figure 11 shows the results of the client's attempt to expedite its most important requirements, but without utilizing the standard U. S. Navy system for doing

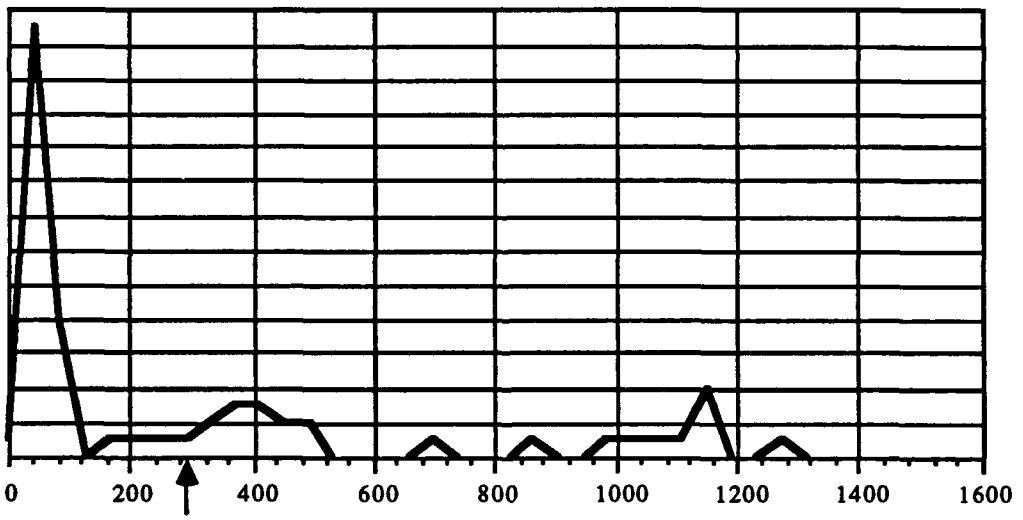

Figure 11. Important, but Uncoded Requisitions

so. This could involve passing the requisitions by telephone instead of regular message, providing air freight delivery of the items, and making individual contact with inventory managers to hasten release of the item. In the language of supply support, this is termed "expediting." Notice that the data in Figure 11 are closely related to "all requisitions" which has a mean time to release of 269.9 days and a standard deviation of 354.0 days. It is considerably worse than "all priority 3 requisitions" which has figures of 215.8 and 316.8 days respectively. The explanation for this is the FMS client chose to code its "hot" requisitions in a manner inconsistent with U. S. practice. Therefore, while its representatives in the U. S. understood the urgency of the requirement, the U. S. supply system did not.

The normal practice in the U. S. Navy for coding urgent requirements involves two steps. The first is to enter a "W" in the first position of the document serial number, and "999" in the required delivery date. These entries are universally understood to indicate an urgent requirement. The second step is to send a message which indicates why the requisition is urgent, specifically which system on the ship is out of commission, how reduced in capability the ship is rendered, and other administrative matters. For a sovereign state to opt to divulge such sensitive information on the readiness of its naval assets is not easy. Most FMS navies are small, and if their ships are cited in "reduced capability" messages–which owing to the long delivery times may be in effect for many months–it becomes an open invitation to any neighboring state to take military action against them.

Another problem resulting from the U. S. system's refusal to be affected by personal expediting, as opposed to systematic expediting, is that of

cultural differences. Some FMS clients are from cultures which stress personal relationships as opposed to bureaucratic processes. For them to meet a stonewall when trying to satisfy their most urgent needs could be interpreted as an insult. Taken over a long period of time, it may mean for them that the United States is in fact not interested in their welfare.

D. BETWEEN SCYLLA AND CHARYBDIS

Just as Ulysses had to find a course to sail between the monster Scylla and the whirlpool Charybdis, so does the FMS client have to negotiate a balance between unacceptably low operational availability at one extreme and financial ruin at the other. What has been shown thus far is only the first evil: low operational availability that results from long lead times. What remains to be discussed is the "cure" for long lead times.

1. The Scylla of Low Operational Availability

Lead times are a problem for all supply systems. The Senate Committee on Governmental Affairs recorded testimony that procurement lead times have grown, and cost the DoD $40 million per day [Ref. 24]. In hearings before the House of Representatives on the proposed Security Assistance Program for fiscal year 1988, the first "lesson" which has emerged from the experience of client nations is that:

> It is important for countries to recognize the full implications of procurement leadtimes regardless of the acquisition channel–FMS or commercial. Given limited U. S. production bases, contract competition delays and special order requirements, it is necessary for countries to buy adequate stocks of spares, munitions, and other consumables....[Ref. 25]

It is possible to overcome long delivery times and preserve operational availability. What is necessary is to have larger stocks of goods on hand to fill the much longer "pipeline." This buffers the customer (the ship)

from the problems associated with getting wholesale stocks. As an illustration, consider that a client might want to achieve an operational availability of 0.8. Using the above equation for A_O, and assuming a baseline mean time between failures of 5,000 hours and mean time to repair of 128 hours, then an average mean supply response time of 1,122 hours is required to achieve A_O of 0.8. Moreover, in a simplified system where there is only the U. S. supply system and a single local supply system, the following structure would provide the needed 1,122 hour goal as shown in Figure 12:

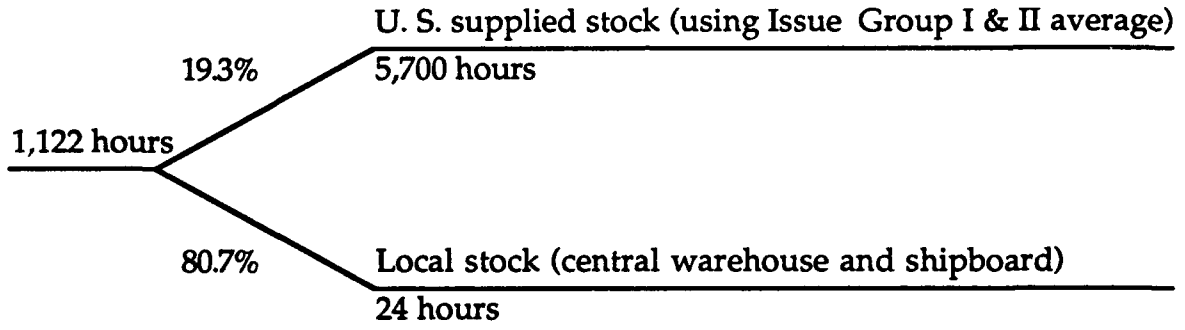

Figure 12. A Possible Logistics Structure

Thus if the probability of having stock on hand is maintained at 80%, then A_O can be held at 0.8.

The problem of being able to satisfy all requirements 80% of the time can be broken down into a general equation. The driving elements of the equation are the variability of demand and the variability of leadtimes. If, for instance, one can be virtually certain that an item is required exactly every 365 days, then it has a low variability of demand. The demand is one annually and the standard deviation of demand is zero. This is not the case, however.

Taking all line items individually, the mean annual demand is only 0.2. This means that on average only one item is required every five years. The

average standard deviation of demand is, however, 1.6 item years. Such high variability is common for low usage items. While the items may be "low usage" for the FMS client, they may well be "high usage" and have lower variability for the U. S. system as a whole.

The second element in determining how many of an item to stock is the procurement leadtime. The average procurement leadtime for all Issue Group III (stock replenishment priority) requisitions is 0.859 years. The average standard deviation is 0.986 years. Hence, on average one must wait for 313 days for replenishment, but to be 95% certain that enough time is scheduled for an item to come in, one must calculate the mean (0.859 years) plus 1.645 times the standard deviation. This totals 2.48 years. Obviously, the uncertainty of delivery adds a large penalty to the overall wait.

An appendix contains the calculations which are summarized here. The stockage levels which must be met to achieve 80% certainty of having items on hand break down as 0.172 (demand) and 1.305 (safety stock). Thus at the point 0.172 plus 1.305, the item must be reordered. This point, 1.477, is not realistic, since the units are discrete and cannot be divided into thousandths. Therefore, a choice must be made between one or two. If the level of one is chosen, a lower than 80% availability rate results (71% in fact). If the level of two is chosen, a higher rate results (89%).

The level of one, and its 71% probability of having stock on hand also affects A_O. It falls to 0.736, and the probability of having five systems up simultaneously falls to 22%. The level of two increases A_O to .866, and appears to be the better choice.

2. The Charybdis of Financial Ruin

Consider the cost of maintaining stockage levels at two when the actual demand is only 0.2. The U. S. system, with much shorter leadtimes, can support 19.4 times more demands with the same stockage level. It is quite possible for the FMS client to have to carry more stock than the entire U. S. system as a result of slow and uncertain replenishment. This is the Charybdis of financial ruin.

The analogy of Scylla and Charybdis implies that there exists some course which splits the dangers and is satisfactory. This may not be the case. Security Assistance may result in both dangerously low A_o and inordinately high operating costs for our allies. We may be overcharging and virtually disarming those who we need to help maintain the common defense.

E. THE COMPETITIVE STANCE OF FMS

The importance of FMS in maintaining our alliances and good relations may be overstated. FMS as a percentage of arms transfers has fallen dramatically [Ref. 26]. Moreover, it has become such an onerous financial burden on our allies that:

> The fiscal year 1990 security assistance request seeks authority to provide all FMS financing on a non-repayable basis, to further increase the quality of U. S. assistance and reduce the debt burden of military aid recipients. [Ref. 27, p. 5]

Thus the pretense that FMS is "sold" to clients has been abandoned. Even at the price of "free," it may not be a bargain if it cannot provide defensive capability, however. When one looks at the actual open market sales of U. S. arms, reducing from them the give-aways, one sees a distinct pattern. Our arms exports are concentrated in a limited area: aircraft. Taking all major arms

transfers from October 1985 through May of 1987 that involved U. S. corporations [Ref. 28], and breaking down the sales according to the corporations' main export business [Ref. 29], Figure 13 results:

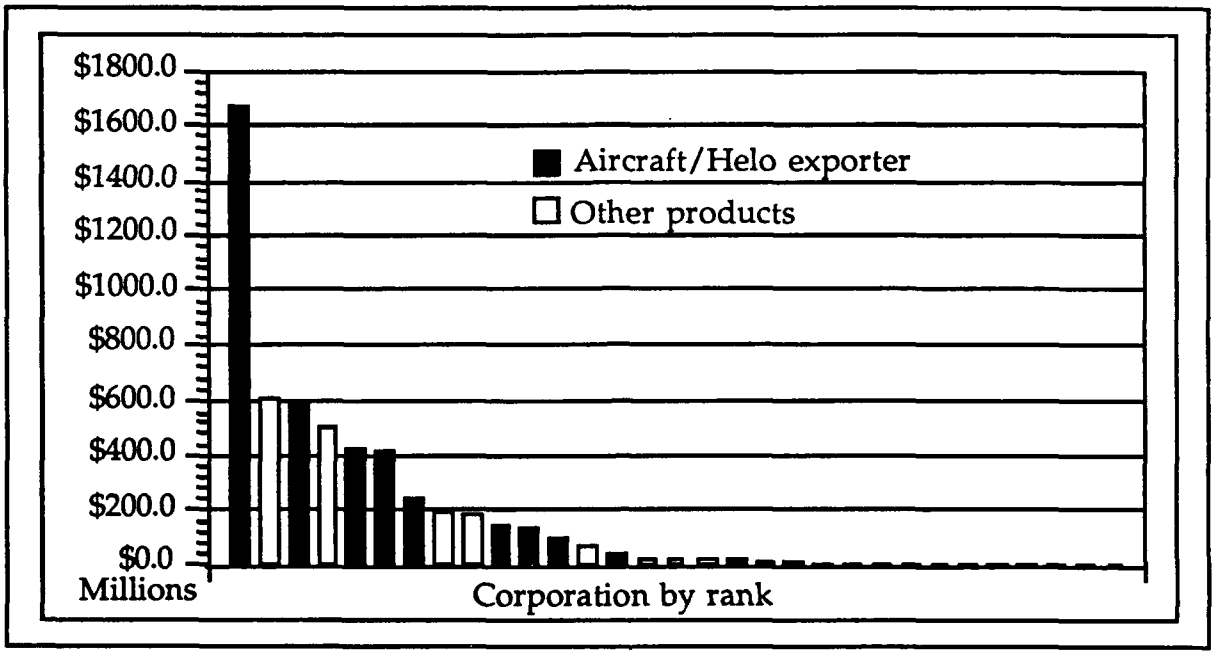

Figure 13. Preponderence of Aircraft Sales

Clearly our sales are geared to aircraft. In other areas of arms production, such as ships, we are not so competitive that other nations desire to use their own cash to buy our products. Furthermore, the sales listed above only total $3.3 billion per year. Should the Japanese with the FSX and South Koreans with the F/A-18 become competitors in the aircraft industry, our real arms exports could become insignificantly small. Our arms industry, shielded by the "Buy American" dictum and hounded by Congressional oversight (there are two and one half times more "procurement oversight agents" than there are FBI investigators) [Ref. 30] has become non-competitive.

Money spent on weapons or supplies that are given to our allies can only be viewed as an extension of our own defense expenditures. That "(a)ssisting America's friends and allies to defend themselves [with FMS credits] is a highly efficient use of resources" [Ref. 27, p. 4] must have a bearing in fact, and not be mere rhetoric. Improvements to the FMS system must be made before "efficiency" is attained.

1. Need for Improved Customer Relations

Supplying anything to a client requires concern for the client's needs. We need to improve how we package logistic support so that the end users can fully utilize our product. This includes having translations of all pertinent technical data for the deck plate level technician to use. We currently school technicians and supervisors in the use and maintenance of our systems. We also provide customer liaison for each FMS client, but in a limited fashion. A dedicated team available to be contacted during the client's normal working hours would improve customer service. A change in law allowing FMS repairable carcasses to be turned in on a one-for-one purchase would be an essential improvement.

2. The Role of U. S. Logistic Support

The U. S. supply system has a top priority: to support U. S. forces. As operating tempos have changed, and the funds available for purchasing stocks of repair parts have risen and fallen, this task has been difficult. It is not surprising that FMS clients have taken a back seat. However, it is doubly wrong to deny the second-class treatment we have provided and pretend that it is first rate. Moreover, it is dangerous to presume that our allies, outfitted with our own equipment, are necessarily capable of operating with it as we

could. If allied forces are to be an important stone in the wall of common defense, it must be a solid stone and not paper maché.

Maintaining high levels of operational capability of U. S. forces while also providing support to FMS clients demands that trade-offs be made. FMS, as a Department of State program, will probably never be given as high a priority by the Department of Defense as supporting our own forces. It is not clear that FMS ought to be given an equal ranking. What is evident, however, is that certain administrative issues must be resolved. Specifically, repairable carcasses from FMS clients must be easily reintroduced into the logistics system. Further, orders from FMS clients must be given more consistent treatment. Ideal, from the client's perspective, would be to be treated like any other customer, i. e. be given stock even if doing so brings the stock level to or below the reorder point. FMS clients are generally small, and have to rely upon the supply system as an "intermediate" rather than a "wholesale" source. It is not financially possible for them to absorb huge leadtimes with even greater variability in leadtime delays. Like any customers whose needs are not being met, they will look elsewhere. Although FMS might appear attractive, being free of cost, it may also be free of benefits. National defense—anybody's national defense—is a serious matter. A fancy race car that cannot run will win no races. From the FMS client's perspective this is, indeed, a serious matter.

V. THE FUTURE ENVIRONMENT OF SECURITY

The new world order is characterized by a return to multipolar politics, away from the bipolar arrangement of the Cold War era. While the Soviet Union remains a potential threat to the United States, it no longer has an empire of satellite states ready to do its bidding. The rest of the world, freed from the polarizing East/West influence, is able to pursue its own interests. Some of these interests are inimical to the United States. It is necessary to explore where new conflicts may arise and gauge their potential significance.

A. TRIBALISM AND NUCLEAR TERROR

The New World Order is not without its pitfalls. Foremost among them is the disturbing rise of *tribalism*. A tribe is a group of people characterized by common ancestry, customs, leadership, etc. *It is not* necessarily a state, since state status requires defined land, general government, and the capacity to engage in relations with other states [Ref. 16, pp. 232-5]. Nevertheless, tribes exist and have important effects upon international events.

A tribe is a social entity. It exists within one or more states and has its own leadership and political agenda. Because it is by definition a "closed society" it is unlikely to consider international issues in any context other than immediate self interest. Its leadership is un-beholden to any established international level of civilization, and is free to act as it chooses.

1. Tribal Warfare

Tribal warfare, which is the concern, is most often *unrestricted warfare.* Consider the differences between restricted and unrestricted warfare, and the likelihood that tribal warfare will continue to be of the latter variety:

> There is considerable ethnographic and ethnohistorical data which suggests that *unrestrictive* war was widespread among tribal peoples. Enemies tried to totally destroy each other...The victors killed as many men as possible and killed or enslaved women and children. [Ref. 31, pp. 149-63]

Total war or absolute war is characterized by von Clausewitz as that common element in all wars that is obscured by the checks placed upon it by reason and civilization.

> Therefore, if we find civilized nations do not put their prisoners to death, do not devastate towns and countries, this is because their intelligence exercises greater influence on their mode of carrying on War, and has taught them more effectual means of applying force than these rude acts of mere instinct. [Ref. 32]

War, to the western mind, is not a "rude act of mere instinct." It is a particular form of political policy. The clear difference between tribal and civilized warfare is essential to understand. The United States has not prepared its forces or policy for anti-tribal warfare, but it must do so now.

2. Tribal Warfare in the Modern World

Well documented cases exist where tribes became armed with modern weapons and continued a policy of unrestrictive war with disastrous consequences. One case, that of the Maori in New Zealand, serves to illustrate the process.

As a people who relied upon temporary farms created by cutting and burning, the Maori tribes constantly needed new land. To get this they fought. The traditional unrestricted warfare fought with primitive weapons was

mainly decided by numbers of warriors. With the introduction of firearms by the Europeans, Maori warfare became totally destructive [Ref. 31, p. 156]. Mass slaughters resulted when battles took place. So dangerous was the situation that food production was ignored in favor of cash crop production in order to buy more guns and ammunition.

After two decades of unrestrictive fighting, the decimated Maori submerged their culture in favor of Christianity, "which provided them with a set of new values which no longer sanctioned revenge for injuries suffered." [Ref. 31, p. 158]

The essential points about the Maori case is that: 1) unrestricted warfare is the case rather than the exception, 2) the introduction of modern weapons did not change the pattern of warfare, and only made it more murderous, and 3) the society had to be recast before the situation could be changed.

A second case is the Mae Enga, an Australian tribe, that fought for similar reasons as the Maori. However, the Australian government thoroughly intervened in tribal warfare and mediated disputes. The impact was extremely beneficial, as might be expected. The tribe has returned to warfare to settle disputes because "(t)he litigation system has become cumbersome and time-consuming. Fewer complaints than in the past are processed and the determinations are more unsatisfactory to the litigants [Ref. 31, p. 156]." Thus, the imposition of law and order can be effected, but only so long as it is convincing and satisfactory to the tribe. When it becomes uncertain or unable to essentially address the grievances, it ceases to exist, notwithstanding the fact of the physical presence of its elements.

Tribal warfare is not restricted to Stone Age aboriginal peoples. It is the growing background of international conflicts. In Liberia thousands die. In South Africa it threatens chaos. In Uzbekistan the finest Soviet soldiers are required to quell it.

3. Terrorist Connection

The international terrorism of the past twenty years is an example of tribal warfare. The groups which perpetrate terrorism are nothing other than tribes. They have common ancestry, customs, and leadership. Their agendas revolve around their own particular needs. One common need, since so many of the groups are fundamental Islamic, is to free their people of the corruption of western influence.

Just as the Maori found modern weapons to be useful, if devastating, additions to their armories, fundamental Islamic "tribes" may find thermonuclear weapons as attractive additions to their forces.

B. URANIUM FOR THE ARAB NATION

The following is a transcript of a Moscow "Vremya" newscast aired June 26, 1990. [Ref. 33]

> Now about something else. Life is full of hazards. There are all kind of signs to caution us against them. For instance: "Caution: High voltage!" or "Danger!" But nowhere will you find a sign reading: "Caution: Irresponsibility!" although we could well do with such a sign. This is illustrated by the following report about phosphate fertilizer delivered to our country from Syria.
>
> Fertilizer containing uranium-238 began to arrive in April. There is some 800 tonnes of it now. Approximately one-third was applied to the soil back in April and early May....

Irresponsibility is the key word in the news report, but not for the reason the correspondent imagined. Syria—along with a number of other Middle Eastern and North African nations—now have the means to produce significant

quantities of uranium. In the case of Syria, the responsibility for this fact lies at the feet of the Soviet Union.

Other nations that have the ore reserves and the plants to separate uranium are Jordan, Iraq, Israel, Egypt, Algeria, Tunisia, and Morocco. Should these nations enter the "nuclear club," the balance of power in Europe and the Mediterranean could be radically changed. The plants needed to strip uranium have only recently been built in the area, and have been built with alarming rapidity. [Refs. 38, 39, 40, 41, 42 and 43]

1. Uranium as a By -product

The mining of uranium ore as the exclusive means of acquiring the element is no longer possible. World demand for uranium has outstripped the availability of highly concentrated ores. However, as the Soviet Union pointed out in 1960 [Ref. 34], vast quantities of uranium are available as the by-product of other mining ventures. In South Africa where uranium is mined in conjunction with gold, concentrations as low as 0.02% are economically feasible to mine. Thus, even though 99.98% of the ore mass has no uranium, the gold produced is profitable enough to allow secondary treatment of the ore to isolate uranium. [Ref. 34, p. 18]

The use of low concentrate ores has grown steadily since the beginning of the atomic age. The following Table 1, published in 1964, demonstrates the shift from highly concentrated ore (where uranium is greater than 1% of the ore) to lower grade ores. Clearly lower grade ores are being used for the production of uranium, but a bottom limit exists where the ore is not economically viable to process. Galkin identifies the lower limit for economic

viability as 0.05–0.07%.[5] However, when the uranium is part of a phosphate rock matrix, the limit cited is only 0.01–0.02%. [Ref. 35, p. 68] .

TABLE 1. CONCENTRATION OF URANIUM ORES MINED [Ref. 35, p. 67]

Year	above 1.0%	1–0.5%	0.1% or less
1948	100%	0%	0%
1953	70%	30%	0%
1958	5%	50%	45%
1962	2%	48%	50%

The actual lower limit is entirely dependent upon the process by which the uranium is extracted, and the Soviet Union has been working for decades at improving this technology.

Phosphate rock is a conglomeration of minerals, but the important component is phosphorus, which is an essential element for agriculture. Phosphorus is generally found in the form of the mineral apatite. Phosphate rock can be crushed and combined with other important chemicals to form fertilizer for agriculture. However, phosphate rock does not readily dissolve and release its phosphorus. It is a "low tech" solution to creating fertilizer, and suffers from very low phosphate rock prices owing to the high transportation costs associated with moving it.

2. Chemistry of Extracting Uranium from Phosphate Deposits

The chemical step necessary to improve phosphate rock is to extract from it phosphorus in the form of phosphoric acid. This can be seen in the

[5]The concentration "0.05%" can alternately be expressed as 0.0005 or 500 parts-per-million (PPM). All three forms are used in the text.

chemical reaction:

$$Ca_5(PO_4)_3 \cdot F(Cl) + H_2SO_4 \rightarrow 3H_3PO_4 + 5CaSO_4\downarrow + HF(HCl)$$

Translated into English, this means that: phosphate rock—here specifically apatite [$Ca_5(PO_4)_3 \cdot F(Cl)$] combined with sulfuric acid (H_2SO_4) becomes ortho-phosphoric acid (H_3PO_4) plus gypsum ($CaSO_4$) which precipitates out as a solid, plus hydrofluoric or hydrochloric acid [HF(HCl)], depending on if fluorine or chlorine is found in the particular apatite molecule.

Dispersed in the phosphate rock is uranium dioxide, which like the phosphoric acid, is dissolved in the leaching process. The uranium is then captured by an organic agent, and separated out as pure fluorine salt, UF_4. [Ref. 35, p. 121]

This process is very important to the production of uranium:

> The extraction of uranium from phosphate rock, as a by-product of phosphate fertilizer manufacturing, is one of the most important problems in the manufacture of uranium. The profitability of this process, despite the low content of uranium, is due to the enormous volume of phosphate rock which is processed to fertilizers. The total amount of uranium in phosphate rock is very large, and it is probable that after the deposits of rich uranium ores are exhausted, phosphate rock, together with shale and carbonaceous ores, will become the most important source of uranium. [Ref. 35, p. 119]

The Soviet Union very early set its eyes on phosphate rich countries because "the deposits in Morocco alone contain about three million tons[6] of uranium [Ref. 34, p. 28]." To put this figure into perspective, "in the late 1970's, the non-Communist countries had a total of about 1.8 million tons of uranium ore [sic] that could be mined." [Ref. 36]

In addition to developing terrestrial phosphate deposits, the Soviet Union also set about exploring the phosphate deposits under the oceans.

[6]All references to "tons" are metric tons unless otherwise stated.

These deposits were found to be deficient in uranium content, because of the tendency of uranium salts to leach out into sea water [Ref. 37]. Consequently, the terrestrial mining of phosphates for uranium appears to be the most important means.

3. Phosphate Production

Countries of the region with significant phosphate rock deposits are included in Table 2 below.

TABLE 2. MIDDLE EAST/ NORTH AFRICAN PHOSPHATE PRODUCTION

State	Millions of tons	Comments
Morocco	56,000	ranks 3rd in world production [Ref. 38, p. 612]
Iraq	7,500	[Ref. 38, p. 460]
Egypt	1,000	high uranium content [Ref. 39, p. 270, 385]
Jordan	945	ranks 5th in world production [Ref. 39, p. 529]
Syria	830	[Ref. 40, p. 1011]
Tunisia	300	found 1985 plus other large reserves [Ref. 38, p. 858]
Algeria	300	[Ref. 41, p. 48]
Israel	(unavailable)	ranks 8th in world production

These eight nations actively mine and process phosphate rock into phosphoric acid. The means to do this has grown enormously in the past decade. Previously most of the production was in the form of crushed phosphate rock. The capacities and production rates for these states are listed in Table 3.

TABLE 3. PHOSPHORIC ACID PRODUCTION [7]

State	Annual Capacity in thousands of tons	Production (1987) in thousands of tons	Developed
Morocco	1,320	604	1987
Iraq	600	130	1980
Jordan	850	565	1981
Egypt	440	100	1986
Syria	376	193	1983
Tunisia	760	572	1986
Algeria	505	(none)	1981-6
Israel	120	120	1981

The tendency to move from phosphate rock export to phosphoric acid production is readily evident. The interest in this change may be economic, since phosphate rock is valued in the range of $25-50 per ton, while phosphoric acid may bring $300 per ton. However, the cost of processing the rock may be high.

In the case of Jordan, it is reported that the costs of processing phosphate rock was reduced by $50 per ton to $200 [Ref. 38, p. 530]. During this period phosphoric acid marketed for between $230-250 per ton [Ref. 38, p. 18]. Even if the value of the ore is neglected, which was for Jordanian ore at the time $36 per ton, the profit margin on producing phosphoric acid appears rather low for the interest being placed in building new capacity.

In 1987 Jordan entered a joint development project for new phosphoric acid capacity with India and USSR. If uranium is the source of the interest, as opposed to phosphoric acid, the interest can be understood.

[7]Sources of data from *Minerals Yearbooks* (op cite) and *The Middle East and North Africa 1989*. Figures are approximate, as year-to-year figures tend to not follow from volume to volume. In one instance, the importation of uranium by Libya from Niger is cited under Libya as 425 tons, but under Niger as 1,212 tons.

Since, with the exception of Israel, none of these nations would be expected to have the technical capability to design and operate uranium-extraction phosphate operations, it is interesting to note who is helping whom. For Morocco the interested parties are China, India, and Saudi Arabia (China and Saudi Arabia are to get their own plants using Moroccan feedstocks). Iraq received Japanese assistance in reconstructing its plants. Jordan, as has been noted, is working with India and the Soviet Union. Egypt recently received an offer from the Soviet Union for assistance in building five reactors and a fuel processing facility [Ref. 42, p. 391], although its recent large phosphate rock deposits have yet to be developed. Syria has been developed by the Soviet Union. Tunisia received technical assistance from the U. S. and Brazil, and financial support from Kuwait. Algeria purchased a turn-key plant from France, but has not been able to operate it because of technical difficulties.

These countries recognize the fact their mineral deposits include uranium. "Quantities of uranium and vandium are now known to be mixed in with the phosphate reserves" in Jordan [Ref. 42, p. 550]. Tunisia "has postponed plans to exploit the country's uranium deposits until the world market improves [Ref. 42, p. 834]." In Syria "there has long been talk of a nuclear power plant, possibly using uranium obtained from local phosphate deposits [Ref. 42, p. 804]." Egypt estimated the uranium content of one of its phosphate deposits at 100,000 tons, and has mined ore as uranium, as opposed to a by-product, since 1980 with a production rate of 100 tons per year [Ref. 43].

Despite the public admission of the potential of these nations to mine uranium, and the fact that all of them have updated their phosphoric acid production facilities within the past few years, none openly discusses the topic.

The reason behind their reluctance to admit any uranium related enterprise is undoubtedly fear of invoking a reaction from Israel. Iraq openly developed a plutonium production facility, and saw it destroyed by Israel.

For Iraq to lose its reactor did not devastate its economy. For a nation like Morocco,Tunisia, or Jordan to lose its presumed uranium processing facilities would be another matter entirely. Uranium, when produced as a by-product, is done as a part of an expensive phosphoric acid/fertilizer complex. Should such a complex be destroyed, along with it would go the basis of these nations' economies. Bluntly put, phosphates are the life of these oil poor nations.

4. The Economy of Enriched Uranium Production

> [We estimate] the value of uranium-235 (in uranium enriched to about 3 percent in uranium-235) to be used for fuel in the world's nuclear power plants during the next decade is about $38,000 per kilogram....Unenriched uranium [is valued at] $66 per kilogram. [Ref. 44, p. 249]

Uranium is a valuable commodity. In the next decades as petroleum becomes less available and nuclear power more reliable, uranium may be the fuel of choice. There is no doubt that much of it will come from phosphate deposits. Its production is therefore a legitimate undertaking. The scale of the potential sales is startlingly high. Using the least optimistic concentration of uranium in phosphates, 100 parts per million [Ref. 45] (which is ten to fifty times lower than Soviet estimates [Ref. 35, p. 72]), Morocco has potential *annual sales* slightly in excess of $1.0 billion, Jordan $644 million, Tunisia $576 million, Iraq $455 million, Syria $285 million, Egypt $333 million, and Algeria $383 million. These figures reflect current capacity to process phosphate rock, the assumed concentration of uranium, the loss of 80% of the uranium during processing to

enriched uranium, multiplied by the current stated value for enriched uranium. It does not include the loss of 35% of uranium during phosphoric acid production which is indicated by the Soviet literature because the techniques listed are over thirty years old, and have been "continually improved."

If the Soviet estimate of the concentration of uranium is used, this potential $3.7 billion industry is up-scaled to $37-185 billion. The world's crude oil market, using $20 per barrel and 1987 production [Ref. 38, p. 41], is valued at $409 billion. As the supplies of oil are depleted and the market for nuclear power increases, uranium will experience greater demand. The price for a kilogram of enriched uranium would likely rise, especially if it is managed by a cartel of Uranium Producing and Exporting Countries. The list of countries that produce phosphates includes, beyond those already discussed, Brazil, United States, USSR, China, Togo, and the Republic of South Africa. Therefore non-Arab exporters would probably include only Togo and Brazil, with the other nations using their own stocks to satisfy domestic demand.

Such an idea, that some new energy cartel could arise, is undercut by the huge stockpiles of highly enriched (93 to 94% U^{235}) uranium which exist in the United States and the Soviet Union. The United States has 500 tons of highly enriched uranium in its weapons stockpiles, the the Soviet Union has an estimated 400-800 tons [Ref. 44, p. 227]. Since the nuclear power plants throughout the world in 1988 consumed 297 tons of U^{235}, this would supply the civilian market for three or four years. Since the annual world production of U^{235} (1987 figures) totaled only 262 tons [Ref. 38, p. 8], an apparent shortfall in production exists. This shortfall is anticipated to grow in the next ten years as nuclear power plant consumption is anticipated to rise to 460 tons of U^{235}

[Ref. 44, p. 230]. Action to dismantle weapons and utilize the U^{235} in power stations is by no means assured. Without doing so, however, the market dynamics to support a new energy cartel could arise.

Using the present phosphoric acid production capacity, and a uranium content of 0.0001, the total expected U^{235} is only 35 tons per year. Therefore, unless a much greater capacity is generated, the northern Africa nations cannot be expected to dominate the market. Since total uranium mining has not expanded to keep pace with demand, there is a strong indication that in the future, those who use nuclear power will have to pay higher and higher rates for fuel. If this is the case, then the phosphate/uranium producers will merely benefit from expanded margins. It is unclear just how far they can expand phosphoric acid production, since it is the primary product and must have a market in order to justify producing uranium. The world is currently consuming 34.8 million metric tons of phosphatic fertilizer per year [Ref. 38, p. 21]. At present they have the capacity to run approximately 10% of this market through their phosphate plants. Since there are other producers of phosphates, it is likely that at best they could double or triple production.

The dynamics of an as yet unborn enriched uranium market are merely speculative. Using uranium for electrical power generation is rational and responsible. Other uses for uranium exist, and unfortunately the use of uranium for atomic weapons must be considered.

5. Enriching Uranium

Uranium as it comes from the earth is not particularly useful. The element is comprised of three natural isotopes. The lightest, U^{234}, is the most rare and comprises only 0.0058% of the element. The next, U^{235} is rare,

comprising 0.71% of uranium, and is the only natural source of fissionable fuel. U^{238} constitutes the bulk: 99.28% [Ref. 46]. In order for fission to take place, the portion of U^{235} in the fuel must be increased. This process is called enrichment.

The level of enrichment necessary for nuclear power plant fuel is on the order of one to three percent. The Soviet Union uses very low enriched fuel for its graphite reactors, the type which became infamous as a result of the accident at Chernobyl. Other types of reactors generally use three percent enriched fuel.

a. Gaseous diffusion technique

The methods available to enrich uranium are three. The first and oldest technology is gas diffusion. This requires the uranium to be made into a gaseous compound called uranium hexafluoride (UF_6) which is diffused through membranes so as to separate the desired U^{235} from U^{238}. It is a very cumbersome process, and necessitates huge buildings to contain the equipment [Ref. 44, p. 201]. This is the technology the United States used to produce enriched uranium, which it discontinued in 1964 owing to the large stock of enriched uranium that it had accumulated. It did not, however, discontinue producing fissionable plutonium, which, owing to its advantage of requiring less material to create a critical mass, became preferred.

b. Gas centrifuge technique

The second method of enriching uranium is with a series of gas centrifuges. This technology is somewhat less dated and less bulky. It requires transforming the uranium into the gaseous uranium hexafluoride and passing it into tanks which spin the gas and separate the lighter U^{235}. It is also reported

to be a "detectable" method of enrichment, owing to the large buildings and equipment involved. [Ref. 44, p. 201]

c. Laser isotope separation technique

The most recent technology for producing U^{235} is called laser isotope separation. Basically, one laser excites the atoms of U^{235} and prepares it to be ionized by a second laser. The ionized U^{235} is electrostaticly collected. During this process the U^{238} is left behind, unexcited, unionized. The most disturbing aspect of this technology is that very highly enriched uranium, also called weapons grade uranium, may be produced in a single step. The most economical method of producing 3% enriched stock would be to completely deplete a portion of the uranium, take the resulting U^{235} and combine it with the balance to achieve 3% enrichment. Metallic uranium is presumably used in the process, which is much less difficult to achieve than uranium hexafluoride. The phosphate ore process produces the solid uranium tetrafluoride which can be reduced to metallic uranium by using calcium. [Ref. 35, p. 388]

The laser isotope method was developed in the United States by Lawrence Livermore Laboratories and Jersey Nuclear-Avco Corporation [Ref. 47]. It was quietly absorbed into the classified Livermore Labs, and is presumed to be classified. However the technology has been made public.

In the *Physics of Quantum Electronics, Volume 4: Laser Photochemistry, Tunable Lasers, and Other Topics,* [Ref. 48] a complete description of the research is provided, detailing exact frequencies of light used and equipment required. Although some difficulties may remain for a nation that

desires to set up industrial production of highly enriched uranium, the published work provides an excellent basis for doing so.

One author states, "Detection of operation could be accomplished by reliance on the distinctive electromagnetic signature of a [laser enrichment] plant resulting from the pulsed operation of the lasers, flash lamps, and other items [Ref. 44, p. 325]. If production of enriched uranium is accomplished underground, however, it is doubtful that the electronic emissions would be detectable.

C. POLITICS OF URANIUM

The value of a kilogram of highly enriched uranium undoubtedly is higher on the black market than in the open market. According to sources, only 25 kilograms are required to produce a nuclear weapon [Ref. 44, P. 306]. Such "highly enriched" uranium contains about 93.5% U^{235} [Ref. 44, p. 289]. In order to produce such a quantity, 3,300 kilograms of "natural uranium" is required. Using a presumed concentration of uranium in phosphate ore of 0.0001, 3,300 tons of ore must be processed. This much ore could be processed in less than a week by any of these nations, and in less than a day by Morocco.

If any of these nations has a political agenda that requires moving into the "nuclear club," and the money necessary to buy technical expertise and equipment to enrich the uranium, then the possibility of proliferation cannot be discounted. Of greatest concern are Jordan and Syria. A miniature Cold War with chronically unstable players is highly undesirable.

The southern flank of Europe is an area that could have provided the Cold War Soviet Union with an opportunity to destabilize Europe. As has been seen, the Soviet Union published valuable documentation over thirty

years ago that encouraged proliferation of nuclear development. Although this is not in itself tantamount to proliferation of nuclear weapons, it does indicate an "open-mindedness" that comes very close. Looking at the list of nations, their anti-Western orientation, locations primarily along the southern shore of the Mediterranean, and common fundamental Muslim character, one must consider whether the Soviet Union–especially in years past when it was attempting to make allies in the region–created the situation where the balance of forces against the West would naturally degenerate as these nations moved into the "nuclear club."

D. AN ENVIRONMENTAL CONCERN

Phosphoric acid production involves tons of powerful chemicals which liberate massive quantities of hydrofluoric and hydrochloric acids. Consider the basic equation whereby apatite is reduced to phosphoric acid:

$$Ca_5(PO_4)_3 \cdot F(Cl) + H_2SO_4 \rightarrow 3H_3PO_4 + 5CaSO_4\downarrow + HF(HCl)$$

Because the ore which is used for this is impure–which is often a reason for using the process to begin with–many other chemicals are present. Phosphate rock is created by the deposit of sea salts, and includes carbon contamination. Therefore it is possible to consider as a by-product of the phosphoric acid reaction the following:

$$C^{4+} + F^- + 3Cl^- \rightarrow CFCl_3 \text{ which is freon F-11, and}$$

$$C^{4+} + 2F^- + 2Cl^- \rightarrow CF_2Cl_2 \text{ which is freon F-12}$$

The acid leaching process creates a soup of chemicals which vary not only with the ore being leached, but within the mass depending upon local chemical composition. If significant quantities of fluorocarbons are generated

by the phosphoric acid process, the danger to the earth's ozone is much greater than had been realized. Millions of tons of reactants are annually processed in the open air. If the presence of hydrofluoric and hydrochloric acid is not enough of a concern, the additional production of odorless colorless freon, which could easily go unnoticed, is more disturbing.

When fluorine is released from apatite, 10% reacts with the gypsum, 60% remains in solution, and 30% volatilizes [Ref. 49]. Since fluorine is one of the most active of all chemicals, it is likely to react with whatever is at hand. It is probable that the fluorine escapes in the form of hydrofluoric acid, which is lighter than air. However, the fact that hydrofluoric acid is so highly soluble in water—infinitely so in cold water, and very soluble in hot water [Ref. 46, p. B-181]—raises a question as to just what form the volatilizing fluorine actually has. If in fact it is some other inert form, such as freon, it is easier to comprehend how 30% of it escapes.

Chlorine is also likely to take the form of hydrochloric acid. This acid is not lighter than air, and so would not float up into the atmosphere as readily as hydrofluoric acid. No reference cited how the chlorine in apatite is distributed in the final products. Like hydrofluoric acid, it is a gas at room temperature, but it is much less soluble. Obviously, it forms a component of freon.

Several chemists were approached by the author with this concern. The view of a chemist familiar with phosphate rock acid-reduction, Dr. Kinney of the Naval Postgraduate School [Ref. 50] is that he does not believe the conditions would be appropriate for the production of freon. He was not, however, aware of any testing at phosphate plants for the presence of freons.

Dr. Jarvis Moyers of the National Science Foundation, Atmospheric Sciences Center in Washington, D. C., was also contacted by the author. Dr. Moyers sees the problem in a different light. He believes the production of quantities of airborne hydrofluoric and hydrochloric acids is primarily a local phenomenon. The acids would rise into the atmosphere only until they meet water molecules which would absorb them before they could reach the upper atmosphere and contribute to the depletion of ozone. The acidified water would then be scrubbed out of the atmosphere as rain.

This could cause a "severe local problem" but would likely not be a global concern. The author volunteered some of the locations where phosphoric acid production is occurring—along the northern Sahara in Africa and in the Middle East—and questioned whether rainfall in such an arid region would serve to scrub the acids out of the atmosphere. Dr. Moyers maintained that rainfall would probably cleanse the atmosphere of these pollutants. He was aware of no research on the issues of freon and air pollution resultant to phosphoric acid production. [Ref. 51]

Dr. Russell L. Elsberry of the Department of Meteorology of Naval Postgraduate School was approached with the question of whether airborne hydrofluoric and hydrochloric acids could reach the upper atmosphere if produced in the region under discussion. His opinion was that it is highly likely, owing to the meteorology of the region. The Sahara generates a large stabile air mass that is churned and mixed by the heat of the desert. This air mass extends high up in the atmosphere, and is capable of suspending desert particulate matter, much less hydrochloric acid molecules. The mass also extends westward over the Atlantic Ocean, occasionally as far as the

Caribbean. At times the Sahara air mass meets with tropical conditions that actually injects it into the lower stratosphere—the region of the atmosphere where ozone depletion occurs. Therefore, global consequences exist as a result of the new capacity of these nations to produce phosphoric acid. [Ref. 52]

A Sierra Club representative for environmental affairs, Mr. Arthur Mitteldorf, expressed interest and concern in this matter, and requested a copy of this research be forwarded to the Director of Conservation for the Sierra Club.

International oversight of phosphoric acid production facilities for the observation of fluorine and chlorine compounds is indicated. Additionally, the observers might test for di-(2-ethyl-hexyl)-phosphoric acid (EHPA) and kerosene. EHPA is the agent used to remove uranium from the phosphoric acid liquor, and it is diluted in kerosene to a 3% solution. The presence of EHPA would indicate the plant is actively being used to produce uranium as a by-product. [Ref. 35, p. 181]

Acid leaching of phosphate ores can be accomplished without any buildings, dispensing of sulfuric acid, or noticeable equipment. Because the ore usually contains some sulfides, it can be "in-pile" leached.

> The ore is arranged in large piles and wetted by rain and/or water. The acid required to leach the uranium is formed by gradual oxidization of sulfides which are already present in the ore or are specially added. The percolated solution is run in special gutters into a container and thence to further processing. The extraction of uranium into solution is between 60 and 80%. [Ref. 35, p. 124]

Such a primitive technology is required, according to Galkin, to make ores with concentration of uranium of 0.0001 to 0.0003 economically profitable to process. For an observer, it requires that fresh ore be found to analyze its

uranium content to compare it with the plant's output. If a large drop in uranium content is noted, the plant is being used to produce uranium.

International oversight is important. Freon production may be a chimera, but if it gains access to determine if these nations are producing uranium, it is a useful pretext. If freon is indeed being produced, the rapid growth of the industry in the past five years may be a primary factor causing the ozone in the atmosphere to be irreversibly reduced unless quick action is taken. Although some respectable academics do not believe this is the case, in the absence of any hard research it is impossible and imprudent to ignore the problem.

E. REGIONAL CONCERNS

Recent interest has arisen in Europe regarding the nations which could be producing atomic weapons.

> After the Islamic Salvation Front won a majority in local elections in Algeria last month, there was also new fear in France and other southern European countries that Islamic fundamentalism could begin to destabilize Muslim countries that for many years have had political stability. [Ref. 53]

"(T)he southern rim of the Mediterranean could emerge as the greatest single threat to Western Europe's security," the article concludes. The reasons for the threat are many. Expanding populations with demographic youth bulges, declining economies, and increasing fundamentalism are sources of trouble. Religious factions can often be controlled by non-political figures. As a result sub-factionalism can occur, and tribalism is the end result. Distinct geographical nations become blurred, and rational interaction between states is made increasingly less likely.

The Mediterranean provides a permeable barrier to the potential conflict, but it is in itself an essential line of communication for not only Europe, but all

of the world. Primitive atomic weapons housed in rusty coastal freighters, rather than modern missiles, could present an unequalled threat to the American Sixth Fleet. Armed with modern weapons and unfettered by Western notions of restraint and subjugation of warfare to politics, these forces could at the very least landlock Italy, Greece, and Turkey. It is a situation which requires attention. The spark which could set off the blaze would likely come from social problems, not political maneuvers. The perceived threat of American "cultural imperialism" could focus the attack on our forces.

VI. PROPOSED STRUCTURES FOR UNILATERAL DEFENSE

A. THE UNILATERAL OPTION

One of the most basic options for national security strategy is to either stand alone, independent, and unfettered by allies or to enter into some multilateral arrangement. The future of the former option—unilateral defense—is the topic at hand. The United States has in recent decades relied upon partnerships for defense. In the Atlantic/European region our partners are the other fifteen nations in NATO. In the Far East our partners are less clearly defined, but are no less important.

As the New World Order takes shape, the likelihood of finding our previous partnerships continuing unchanged is very low. One solution to this is to dilemma is to plunge into international defense as discussed in the next chapter. The opposite solution is to undertake the task alone.

The main hurdle confronting the United States in the project of creating a structure to support unilateral defense is to creating forward basing structures from which to carry the fight.

B. SELF-SUFFICIENT BASING

A world power that acts without allies faces a serious problem when overseas basing i. required. In the past the United States has relied upon allies and has leased access to their sovereign soil for the purpose of creating and maintaining forward bases. This option is becoming more expensive both in terms of dollars paid and political costs. A solution to this dilemma is

proposed in a Naval Civil Engineering Laboratory Technical Report [Ref. 54]. The name of the solution is the Modularized Ocean Basing System.

1. Modularized Ocean Basing System: MOBS

A solution to the problem of not having bases on foreign soil is the ability to construct a base wherever one is needed. Figure 15 illustrates a

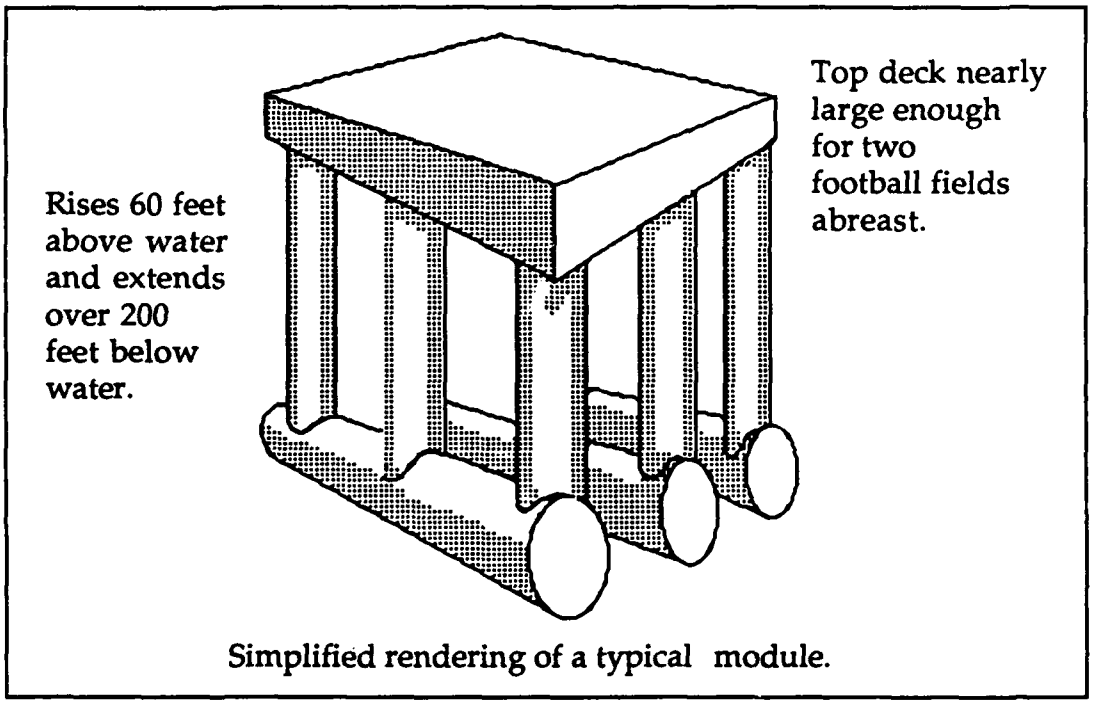

Figure 15. Illustration of a Typical Module

typical module. The modular building blocks of such a base are described as 300 by 300 foot units set atop hollow vertical columns which are in turn attached to horizontal cylinders. With a large number of modules—the report specifies 132, enough to place four abreast in a column 33 modules long—a 9,900 foot runway can be constructed. Such a runway is required for C-5 and C-17 aircraft to land and discharge cargo. Below the top "flight deck" would be

two more decks for stowage, support, and berthing. The mobile base would contain in excess of 1.25 square miles of deck space.

The draft of the units would be about 200 feet, and the freeboard is designed to be 60 feet so as to prevent waves from reaching the top deck and interfering with flight operations. The material from which the modules would be created is prestressed concrete. This is concrete poured over cables which are drawn very taut prior to when the concrete sets, which provides a very strong final product. The technology of prestressed concrete is well developed, as is the construction of semi-submersible ocean platforms.

2. Feasibility of MOBS

There is no technical reason to reject a modularized ocean basing system. The individual platforms can be built and towed about the ocean. The adequacy of the system to actually provide a safe runway for cargo planes is not yet established, however. Since the modules would be semi-rigidly networked, one would expect the sea swell would raise and lower them, in turn producing the rippling effect visible on the main deck of a Great Lakes freighter. The effect could be duplicated on land by constructing a landing strip with a series of rises across its length. On such a runway the effects on the undercarriage of a fully loaded C-5 could be tested to determine if it could safely withstand the dynamic forces generated by the impacts with the crests as it takes off and lands.

There are other considerations than the technical merits, of course. The first is the strategic value of MOBS. Since the report tests this essential variable by analyzing a scenario which begins with the MOBS units staged in Okinawa, one must ask if MOBS is a general solution or a special solution

aimed at replacing the Philippines and Diego Garcia. Staging a mobile system at a forward base in order to cut down the time required to deploy it makes one question its actual strategic value.

Okinawa is not a large island. It has only 554 square miles of territory and a limited amount of surrounding water that is of the required depth (one assumes around 50-80 fathoms) for anchoring the modules while awaiting mobilization orders. If the 132 modules are individually anchored to prevent abrasive wear during storage, with a 5:1 scope to the anchor chains, the nest of modules would be over five miles across and range over at least 16 square miles. This would be a rather significant imposition, and one which the Japanese might balk at accepting.

Since the modules would be a strategic asset of the United States, it is inconceivable that they be left out of range of supervision, subject to sabotage by enemies. Therefore they must be stored in the vicinity of a military base. Withdrawing the modules from Okinawa and stationing them near our own coastline in California could precipitate a violent environmental outcry. However, the Guamanians or Hawaiians might accept them.

Cost, however, is the primary driver in determining feasibility of the MOBS concept. The report calculates the cost of *a single facility* would "not exceed the projected year 2000 cost for leasing and access rights" of *all our foreign bases combined*: $7.5 to $11 billion. The total cost of providing such basing around the world, which includes much more than just one for use in the Indian and Pacific Oceans, gives new meaning to the term "prohibitively expensive."

C. CONCLUSION

The political costs of entering into multilateral defensive arrangements are not inconsequential. The national interests of the United States are constantly in danger of being compromised when consensus among allies is required. However, the strategic and fiscal costs of attempting to maintain a unilateral military structure are even greater. Trying to construct overseas bases on an as-needed basis slows our ability to respond. Ultimately, it is the cost of the infrastructure—for sealift and mobile bases—that disuades opting for unilateral defense.

VI. MULTINATIONAL DEFENSE

Multinational defensive arrangements have played an important part in the design of U. S. strategic defense in the past. This was owing to the existence of a set of common threats in WWII and the Soviet Union during the Cold War. Without a "common enemy" it is difficult to find a reasonable basis for multinational defense without going a bit further afield. An arrangement which allows an arm's length relationship with the imperfect sovereign rulers of foreign states is much preferred to open alliances. Just such an arrangement is possible through the development of United Nations garrison port complexes.

A. UNITED NATIONS GARRISON PORT COMPLEXES

A garrison of selected forces stationed at a deep water port complex is a form of defense in being that could guarantee peace. Such forces, established by the United Nations and manned by a spectrum of soldiers, sailors, and airmen would have little "political baggage" to hinder them in moving against aggression within their sphere of action.

If the UN is to become the central conduit for military action in the world, a development which has many positive attributes, it must have locations from which to rapidly deploy forces. Establishing permanent UN garrison ports is a reasonable solution to this problem. Many potential problems can be resolved by the mere presence of such facilities if they are well sited.

Three vital narrows exist that are of general interest to mankind. These narrows are in Panama at the canal, in Suez, and in the Straits of Malacca. With significant permanent military presence in these three locales, the free

movement of ships and goods could be guaranteed from local or regional strife.

In addition to key choke points, several other locations for garrison port complexes would be necessary. Locations such as Charleston, S. C., and Portsmouth, England, could provide coverage of the Atlantic basin. Darwin, Australia, and Hawaii could provide defense of the Pacific Basin. The Indian Ocean, flanked by Suez and Malacca, would only require a force in Diego Garcia to ensure a prompt military reaction capability to aggression in the region.

Thus a total of eight garrison ports could provide significant protection to the world's population. Of these eight locations, six already are developed and are in the hands of either natural allies or the United States. The remaining two, Malaccan Straits and Suez, would have to be developed. Such development must include housing for home ported personnel, training facilities, and repair facilities.

If each garrison port were outfitted with a fighting force consisting of: a carrier battle group, a cruiser/battleship group, an amphibious attack force, a mechanized army division, a light/marine division, a bomber wing, several tactical strike wings, and a special operations force, then an immediate and convincing counterforce to any local problem could be rapidly brought to bear. Although such a list of forces, especially multiplied by eight locations, appears rather large, it is not when compared to the forces presently under arms in the world.

B. CREATION OF AN INTEGRATED MILITARY STRUCTURE

Multinational attack squadrons, flying stealth aircraft, stationed from forward land bases and aboard aircraft carriers would meet with

comparatively little political and virtually no effective military resistance. The potential to severely curtail local military violence is very high.

Ships, presumably owned by individual nations and posted to the U. N. force, would have to be back-fitted at the garrison port facilities with common equipment for data link, communications, and other technical items. Aircraft and ground equipment must be of a common type within each garrison, if not across the board. Training and tactics would also have to be common. Moreover, the officer corps and troops would have to be completely integrated so as to avoid any internal divisions.

The problems of language and culture cannot be avoided. However, by making the force a professional one, with advancement from within and a common *esprit de corps*, problems would be minimized. It would be possible to be highly selective when choosing members for the force, since the general population of military forces in the world would probably be contracting.

The more varied and demanding the training regime for the forces, the better. By appearing in all corners of the world and showing itself to be formidable, an appearance of invulnerability could be achieved. Such a belief—by the troops as well as the local populations—would serve as deterrence to aggression. It is impossible to achieve this "on the cheap." Funding must be adequate to afford proper outfitting and training.

C. COMMAND AND CONTROL

No United Nations force can escape the initial reaction that it would be slow to act. The necessity of decisive action is the single best reason to maintain unilateral power. However, a multinational garrison port need not be hamstrung by the political inertia of the entire United Nations. The local police

chief does not await the instructions of the city council to do his work. Nor does the military wait for Congress to come to a conclusive frame of mind before moving forces. The commander of a garrison port complex, in charge of a "world precinct," should have the autonomy of action to do as he sees fit in defense of clearly established objectives.

A concern arises that the commander of a garrison port complex, with the best equipped and trained military force in the region, could entertain visions of personal conquest. This situation could occur. To prevent it, the system of rotating personnel from base to base and from job to job, preventing any personal attachment of troops to a single leader, is essential. Another idea which is practiced in some nations, is to retire the commanding officers upon completion of their command tour, to discourage them from creating a personal power base. The military must remain subservient to the political leadership, and not form a viable alternative.

The national interests of the United States serve as an excellent point of reference when considering how to empower the commander of a garrison port complex. First, any aggression by a nation against the world at large or any neighboring state must be countered. Second, private property, insofar as it falls into the international arena, must be defended. These are clear enough objectives. The defense of man from tyranny or organizational oppression is not as clear, and would best be left to the decision of a general assembly to determine if the internal order of a nation ought to be attacked and replaced. The final objective, to encourage free speech and press and open societies, would be served by the membership of individuals within the multinational force and the pervasive presence of the force throughout the world.

D. NATIONAL VERSUS INTERNATIONAL OBJECTIVES

By placing significant quantities of United States forces under a multinational command, the specific national interests of the U. S. would be ignored in favor of general interests. This is a bone which sticks in the craw of those who feel there is a necessary conflict of the United States and the rest of the world, and that control over U. S. forces must never be relinquished. This is the result of a confusion between conflict between our national objectives, where there is none, and conflict within the marketplace, where there is a great deal.

The United States fights constantly and consistently for free trade. This is not a policy that seeks to protect our citizens or avoid the natural conflicts of the marketplace. The marketplace is where labor, energy, and capital are exchanged. When a home buyer in San Diego takes out a $500,000 mortgage at 11% interest, he is in reality bidding against other borrowers for the capital. A competing bidder may be a third-world industrialist who would build a factory and employ hundreds of employees. A basic conflict exists between the two, although they would never meet each other. Similarly, energy supplies are regulated by a market mechanism, going to whomever finds the greatest economy from the use of the energy. More complex structures such as manufacturing plants and markets for the created goods are similarly driven by market forces.

It is easy to see the conflicts generated in the market place as a source of national interests that must be defended. Except for maintaining the market place itself, which is to say free access *to bid* on resources, there is no military role whatsoever. The only way a military commander can secure a "national

interest" such as cheap minerals is to invade and colonize a state. This would be an illegitimate use of military power, and ought to be defended against—not prepared for accomplishment.

The areas where some conflict may arise, such as establishing the point where a single person's rights end and society's begin, are real. The example of how to recompense society for profits from deep sea minerals is an example. Therefore, it is necessary to understand that some risk is entailed in subordinating national interpretations of "what is right" to multinational groups. This risk has to be compared to the benefits that will accrue from the multinational structure. One significant aspect of the equation is the opportunity cost of trying to do defense "on our own." A multinational defense force which protects all international commerce could logically pay for itself by means of a uniform tariff on all international trade. No national force could hope to impose such a tax. In concept it is very similar to pooling risk, which insurance companies do, to reduce the cost for all participants.

E. THE PROBLEM OF CREATING MONOPOLISTIC DEFENSE FORCE

Given that a multinational force could be effective and well received, it would become a monopoly providing a public good. It is very difficult to calculate the "right amount" of a public good to produce, and even more difficult to efficiently price the good. Therefore, the defense force could grow beyond the optimum size, and provide a superabundance of "peace" at an inefficient cost, since other goods would have to be sacrificed to acquire it.

This problem would occur to a number of people. Some would immediately attempt to cut back the forces until it is clearly evident that there is a shortage of defense: in other words aggression would break out that the

reduced force could not quell. Others would favor perpetuating the force as a kind of bureaucratic animal growing at a compounding annual rate of 10%. There is no easy solution to this problem, and it must be recognized at the outset.

This dilemma is not limited to multinational forces, clearly, since the same factors exist within each nation as it tries to calculate the correct size of its military. What is different is that if the multinational force drives out all national defenses, and subsequently is cut below a critical level, then aggression could arise that no force in the world could counter.

F. LOGISTIC SUPPORT OF A COMBINED FORCE

A stand-alone military force, such as comprised in a garrison port complex, should be designed to be able to perform all maintenance through the depot level. This is facilitated if standardized equipment is used as much as possible. A network of air logistics would interconnect the garrison ports, and provide the means to transship logistics support. In addition to indigenous air and sea lift, each command would establish whatever arrangements would be necessary to increase mobilization capacity from the assets of local nations. Any significant military action would necessitate moving additional forces and equipment.

In the case of ships assigned to duty with the United Nations forces, additional logistics is required. Since only the back-fitted standard equipment would be readily supported by the repair and supply facilities, each ship must have its systems catalogued in a standard fashion and supply support provided by the home nation.

Should "special services" be offered by the garrison port complex, such as providing the hardware and personnel support for a surface-to-air missile defense site or early warning radar site, the services would be billed as a separate expense to the contracting state. These services could provide an attractive alternative to local defense forces, and further inhibit any regional conflict by placing highly trained professional forces directly in the path of an aggressor. No undue logistics problems would result from such installations, as all equipment would be of a standard design.

By fracturing the logistics structure into eight equal segments, the system as a whole would be immune from sudden attack. Major supply centers and repair facilities in eight garrison ports would replicate one another, and provide immediate back-up should one or two be attacked and destroyed.

G. SUMMARY

The use of the United Nations as a military organization is both an attractive and viable option for the future. The risk of assigning large inventories of personnel and equipment to a multinational force with multinational leadership is: our national interests might be ignored in favor of other interests. However, in the broadest sense, this "problem" is one of misperception of American interests. The concerns which are usually cited as being a problem are primarily with the marketplace, and not with the rights of man.

The rewards for using an international rubric for maintaining the peace are many. First of all, if the decision process to use limited force is relegated to the regional commander, rapid response to aggression is possible. Peacekeeping is generally not a political process. Warfighting, on the other hand, is. When a multinational force acts to maintain the peace, it can do so

with the self-assurance of a policeman on his beat. When the forces of a single nation are used, however, the peacekeeping role comes very close to warmaking. There certainly will exist situations where even a multinational force can not move without the direction of political leaders, but those occurrences would arise in either event.

The financing of a multinational force presents some interesting possibilities. Up to now, many nations—especially Japan—have reaped the harvest of peace without paying for the costs. If peacekeeping goes international then there is no excuse for not contributing to the effort. Financing the expense through the assessment of a tariff on international trade would only be partially correct, since the internal economies of nations also benefit from assured peace. Export-import economies such as Japan could rightly object to such a basis for assessing contributions. Dues, as in United Nations dues, are not readily collectible from truculent nations. In this the United States has demonstrated its ability to dodge un-mandated liabilities. Therefore assessing dues based on perceived "benefits" is a tenuous method of financing operations. Withholding services, i. e. not defending a nation for non-payment, is not a viable option. The only leverage which would exist is the amorphous "world opinion," which might coerce compliance with reasonably calculated dues.

There is every reason to believe a multinational force would be less expensive and more efficient than many national forces. The economic law of comparative advantage is clearly applicable: a specialized force is more efficient than many less trained and well equipped forces.

A United Nations military defensive structure is an idea which we may not be able to refuse. It could not occur in a vacuum. Economic conflicts, such

as the problem with Europe '92 and Japan, must also have an effective forum for resolution. However, there is no overriding reason to not support the concept, and many important reasons for doing so.

VI. THE OPTIMAL SOLUTION

The problem is "what shall be the form of the United States' security structure in light of the changes that have occurred in the world." Any solution to this problem must be measured against its ability to accomplish the national interests. That solution which best succeeds in attaining our national interests is the optimal solution. Although so much appears obvious, it must be noted that many spurious interests compete with the genuine ones in measuring the effectiveness of a potential solution.

A. THE NATIONAL INTERESTS REVISITED

As previously developed, the national interests of the United States are generated from the unique perspective of the individual-as-sovereign. The interests themselves—to be free of external threat, to have a peaceful world, to be free of the tyranny of other men or social organizations, and to protect private property, free speech and free press—are the driving needs which organize not only the national agenda, but also the local and international agendas.

It is necessarily consistent that the interests of the sovereign, the individual man, are unchanging both in his immediate environment and in distant places. The national level is really an accidental and arbitrary delineation. Although it is a highly visible and powerful level, this has nothing to do with the underlying interests themselves.

Many people in the world believe there is an American Empire. They see American involvement everywhere. They note the presence of American armed force in many lands. They cite the proliferation of American culture as *cultural imperialism*. But they fail to understand the essential kernel of America.

If each man is a sovereign, endowed with inalienable rights, then he is not a chattel, a mere possession, of some other sovereign. Accepting this to be true, then the boundaries which separated earlier "sovereigns," international borders, have no real meaning. Thus the "American Empire" spills out from the United States into any place where an individual accepts the truth of his own sovereignty and struggles to make it a fact. As an empire it is unique from the aspect that it is absolutely dispersed. Washington has little impact in making policy for the "empire." Yet, it must be admitted, some aspects of "empire" surround the result.

Military force is concentrated to some degree at the national level, but it also exists at the state level in the form of state guards and police, at the local level in the form of police and the posse, and finally and not insignificantly at the individual level as a result of the inalienable right to possess deadly arms. The individual sovereigns will not be easily dispossessed, but they will also cooperate to make a common defense.

As the number of men and women who have accepted their sovereignty and struggled to realize the same has grown, so has the region grown in which we must accomplish our national interests. In terms of the traditional boundaries established by monarchs, our interests are international. However, we are in no way beholden to those people who willingly submit themselves to their political party, their corporation, their language, or to their theocrat. These people are not individual sovereigns, *they are mere chattel* and are also potentially dangerous, since their sovereign could decide to use them against us.

B. THE NEW WORLD ORDER

The new world order was born in the Soviet Union. Previously adhering to the premise that the East and West must not only conflict, but eventually war, the Soviets changed their orientation.

> It is impossible to imagine the realisation of this ambitious project [to resurrect the Soviet economy] unless there is a major reallocation of resources—human, financial, production facilities, raw materials—from the military sector of the economy to the civilian. Likewise it is difficult to see how there could be such a shift so long as the old-style, Soviet political thinking prevailed. Hence the advent of the 'new political thinking' (*novoe politicheskoe myshlenie*), which is founded on the premises that countries of differing economic and social systems have differing legitimate interests; that the world—and, therefore, the states in it—are interdependent; that nuclear war is inconceivable (the principal agreement to emerge from the Geneva Summit); and that the superpowers should aim for 'sufficiency' in defence. The corollary to the new thinking is disarmament. [Ref. 55, pp. 7-8]

The advent of *new political thinking* eclipsed the inherent hostility which characterized all previous Soviet political relations with the West. Behavior has followed and confirmed the change in policy.

There remain thousands of nuclear warheads on weapons pointed at the United States, and similarly at the Soviet Union. However, the deadly embrace of the Cold War is broken. The probability of conflict with the Soviet Union is much less, and now the significance of conflict elsewhere becomes more important.

Some authors have long believed that the institutionalized struggle between East and West was essentially a game, and like any game the only way to stop it was simply to stop. "The game stops (if it is a two-party game—as the arms race mostly is) only when one of the players gets up and says, 'I'm not going to play anymore.'...I mean it. The game is over. Finished. [Ref. 56, p. 278]"

In some sense this is exactly what happened. Gorbachev said, "It's over," and the game ended. Yet prior to then, when the "old-style Soviet political thinking" prevailed, Soviet arms were intended to impress Soviet will on the West. The same author cited above, M. Scott Peck, said: "heretical (unreal) thinking is dangerous only because it tends to lead to unrealistic, and hence dangerous behavior. [Ref. 54, pp. 245-6]" Not responding to the military strength of the Soviet Union, simply to "end the game" has to at least be considered as unreal thinking.

C. UNILATERAL OR MULTILATERAL DEFENSE

The key issue in determining the optimal solution to strategic defense is the choice between unilateral and multilateral defense. This is not, it should be noted, an either/or question. Unilateral forces can augment multilateral arrangements. It is a matter of emphasis rather than outright choice.

1. Unilateral Defense

A nation of individual sovereigns, the United States, faces a world in which few others completely share our goals. Even familiar states, such as Japan, may not serve as allies who would support the interests which are essential to America. Allies are nations, and even in the best case nations are only representatives of the true sovereigns. Unilateral defense allows us to escape the difficulties of making allies of tyrants or having to support those we would otherwise oppose.

By maintaining large national defense forces, the United States is able to move where and when it must. If large enough forces can be maintained, unilateral defense is viable. However, the fiscal cost of doing so may

not be possible to bear. The costs of providing our own sealift and mobile basing appears to exceed the benefits achieved by avoiding the frustrations of shared decision making with equivocating allies.

2. Multilateral Defense

There are a number of forms of multilateral defense. Each has its own merits and demerits.

a. Natural allies

Forming an alliance with those few nations that are so similar to the United States that creating a common defense would not threaten compromise of our national interests is attractive. The problem is that there are too few nations that qualify as natural allies. Although the distribution of these nations is generally broad—Australia, Canada, Great Britain, and perhaps some other European nations—vital parts of the globe still exist which are not proximate to any of them.

b. Regional Alliances

NATO served as an excellent regional alliance during the Cold War against the Soviet Union. Yet today it loses importance as the nature of the threat to the United States has changed. Other regional alliances have similarly suffered. *Ad hoc* alliances, as in the Persian Gulf, have a strictly military purpose but do not serve most of our national interests. The strikingly similar common element of regional and *ad hoc* alliances is the existence of a single common enemy. Hopefully, the world will be free of any single, common, and powerful enemy. Without one, the impetus for entering regional alliances is at best weak.

c. International Defense

The creation of a genuine international defensive structure under autonomous control is an alternative that has special merits. Significant forces could be concentrated in locations selected for their logical purpose, as opposed to their political convenience. Rapid military response to any outbreak of international violence would deter international aggression. A permanent force structure financed by the people who reap the benefits of peace would properly share the burden that today falls heavily on those who can rather than those who ought to maintain the peace.

The objectives of the United States are not generally removed from nor at odds with those of mankind. We would, therefore, have a great deal to gain and little to lose by opting for international defense. It is preferable to finding allies who, while individually objectionable, are well sited and politically expedient to support so as to maintain basing and overflight rights.

By establishing a significant international force structure, we would not be prevented from maintaining an independent national force. Thus, in the event a regional power like India decides to "protect Indian citizens" in a second nation, the resident international force could be ballooned by not only other U. N. garrisons, but by our own forces as well.

International defense is a logical and rational next step in the world. It is made even a more viable alternative by the fact that the United States can not afford to maintain the kind of force structure that it has developed over the past forty years. It is also made more viable by the fact that the clear and present threats of the near future have changed so radically

from the recent past. The agonizing closed societies of the world, the tribal states, which fear and resent the imposition of the open society of the West present the greatest threat to peace. Limited interdiction by a non-political multinational strike force is the ideal means of excising the military/terrorist capabilities of these tribal entities.

D. LOGISTICS FOR THE NEW WORLD ORDER

In logistics there is no greater error than preparing for the wrong strategy. Continuing to prepare for unilateral/NATO defense is to move towards that error. The better course is to begin to prepare for the advent of international defense. This requires a clear delineation of the relative importance of the multinational force and the national force. It appears today that the FMS system, perhaps with good cause, places the FMS client far behind the national force. If this continues in the future, the international force would have no rational alternative but to eschew American weapons in favor of those which will be supported. Moreover, if the logistics structure is to be integrated between national and international forces—as clearly it ought—then the United States logistics structure must become skilled in new areas. Purchasing in foreign states is different than doing business in America. Providing the technical documentation for weapons systems in a range of languages is a new necessity. So too is the need to integrate a large number of foreign manufactured systems into both the national and international logistics system.

The *New World Order* is a catch phrase for change. The present logistics system, built up over the past decades in support of missions and objectives which are no longer viable, will change just a surely as the force structure

changes. The immediate task is to understand the changes that have occurred, and to search out the features and dimensions of the future. The next task is to anticipate the results and facilitate creation of the logistical structure necessary to support them.

> It is not enough that operational logistics planners—those dealing with port capabilities, strategic lift, shuttle lift, in-theater support services, forward battle damage repair, medical support, and battle force logistics—must deal with deliberate planning and defined strategies. They must look at optional scenarios envisioned conceptually in the maritime strategy and plan for a wide range of scenarios...[Ref. 57]

The optimal solution to provide defense is to create a viable international structure augmented with as small a national force as necessary. Concurrently, the logistics must be designed to support these structures as efficiently and effectively as possible.

As the world hurtles into the future, preparations must be made. Until all the world comes to accept the sovereignty of man and accepts his rights and responsibilities, there will be wars. A new phase is unfolding and many of the rules are changing, but our task remains. Oppose external threats. Enforce peace abroad. Defend men from the tyranny of all forms of despotism. Ensure the rights of private property, freedom of speech, and a free press. These are the stars to steer by. Although we have cleared the rocky shoals of the Cold War, we have not completed the voyage. Nor in our lifetimes or even during our children's or grandchildren's lifetimes is it likely to be complete. Yet it is truly auspicious that we enter a new millennium having made the progress we have. There is hope, and there is also work to be done.

APPENDIX

The calculations involved in estimating necessary on-hand stock in Chapter IV are as follows. The number of line items, i. e. different repair parts, involved exceeds several hundred. For each line item a mean annual demand was calculated, along with a measure of the standard deviation of demand. The standard deviation formula employed is:

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

The resulting calculations found the *average standard deviation* of demand to be 0.986 years. The *average mean* demand, however, was found to be only 0.2 demands per year. This creates a problem, since with low-demand items it is often assumed that the most appropriate statistical distribution is the Poisson distribution.

Inventory Management, NAVSUP Publication P-553, in appendix H to chapter 2, delineates that for demand frequency (therein termed "procurement problem variable," which is essentially the demand expected during leadtime for initial wholesale stock requirements) greater than 20, a Normal Distribution is used, for demand levels between 1 and 20 a Negative Binomial Distribution is used, and for demands less than 1 the Poisson Distribution is used.

The Poisson distribution is convenient to use because it is tractable. In fact a Poisson distribution has a single parameter, usually termed λ (lambda) that is equal to both its expected value, E(X) or mean value, and its variance, V(X). In the case of the data at hand, the mean and variance are widely

separated. The mean, as stated, is 0.2. The variance, which is equal to the standard deviation squared, s^2, is 0.986^2 or 0.972.

Since the distribution parameter is equal to both the variance and mean, either could be taken to be true. Consider the consequences of accepting the mean as λ when computing the probability of not stocking out 95% of the time.

$$p(i) = \frac{\lambda^x e^{-\lambda}}{x!} \quad \text{and} \quad \sum_{i=0}^{Q-1} p(i) \le R \le \sum_{i=0}^{Q} p(i)$$

where Q is the quantity to stock and R is the probability 0.95

With λ equal to 0.2, stocking one part results in a 0.983 probability of not being stocked out. Therefore, only one part is required to satisfy the goal of having 95% coverage. With λ equal to 0.972, however, three parts are required reach 98.3% coverage, because with only two parts a level of 92.5% certainty of not stocking out is attained.

The difference between the two levels is evident. They are obviously not the same. This is because the distribution is not a Poisson distribution, but some other distribution.

A danger exists when, in order to make the mathematics less cumbersome, an unwarranted assumption is made—such as applying the Poisson or Normal distribution—because the actual variability of the process can be thrown out in the process.

In this case each of the over two-hundred fifty standard deviations were measured and compared to their related means. It is evident that no tractable distribution approximates how these repairable parts were actually demanded. Therefore the best alternative is to accept the estimate of the standard

deviation, as calculated with the formula cited in the first paragraph, and absorb the greater variability through higher stockage levels. This can be done by building an empirical distribution based upon the data. The information on each part is too scanty to allow much interpretation. However, either taken all together or broken down into families of similar parts, an empirical distribution can be generated. From this it is possible to perform the mathematics to determine what stockage levels are necessary to achieve required certainty.

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National Science Foundation
Atmospheric Sciences
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17. Commanding Officer — 1
Navy International Logistics Control Office
Philadelphia, PA 19111

18. Dr. Dan Trietsch — 1
Associate Professor of Operations Management and Logistics
Department of Administrative Sciences (Code AS/TR)
Naval Postgraduate School
Monterey, CA 93943

19. Dr. David R. Whipple — 1
Chairman, Department of Adminstrative Sciences
Naval Postgraduate School
Monterey, CA 93943

20. Dr. Alan McMasters — 1
Academic Advisor for Material Logistics Support
Department of Administrative Sciences (Code 54/Mg)
Naval Postgraduate School
Monterey, CA 93943

21. Mr. Carl Pope — 1
Director of Conservation
Sierra Club
730 Polk Street
San Francisco, CA 94190

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Naval Sea Systems Command
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