# THE LONG-RANGE FUTURE OF THE NAVY PHASE II, 1972-1985. VOLUME I.

Naval War College
Newport, Rhode Island

19 June 1972

# UNITED STATES NAVAL WAR COLLEGE

## GROUP RESEARCH PROJECT REPORT




# THE LONG-RANGE FUTURE OF THE NAVY

## PHASE II, 1972-1985

**Volume 1**





This paper is a student research
expressed in this paper are those of t
President, Naval War College.

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AD A010584

U. S. NAVAL WAR COLLEGE
Newport, R. I.

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1972-1985

PHASE II-REPORT

VOLUME 1

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Security Classification

## DOCUMENT CONTROL DATA - R & D

*(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)*

| 1. ORIGINATING ACTIVITY (Corporate author) | 2a. REPORT SECURITY CLASSIFICATION |
|---|---|
| Naval War College<br>Newport, Rhode Island | Unclassified |
| | 2b. GROUP |

3. REPORT TITLE

The Long-Range Future of the Navy Phase II, 1972-1985. Volume I

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Group Research Project Report

5. AUTHOR(S) (First name, middle initial, last name)

H.H. Abe, et al.

| 6. REPORT DATE | 7a. TOTAL NO. OF PAGES | 7b. NO. OF REFS |
|---|---|---|
| 19 June 1972 | 275 | Numerous |

| 8a. CONTRACT OR GRANT NO. | 9a. ORIGINATOR'S REPORT NUMBER(S) |
|---|---|
| b. PROJECT NO | |
| c. | 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) |
| d. | |

10. DISTRIBUTION STATEMENT

Distribution of this document is unlimited.

| 11. SUPPLEMENTARY NOTES | 12. SPONSORING MILITARY ACTIVITY |
|---|---|
| | Naval War College<br>Newport, Rhode Island |

13. ABSTRACT

This study forms Phase II of a continuing effort to identify future world trends and their implications for the U.S. Navy. *Phase I, completed in 1971, described major world futures without delimitation. This portion, Phase II, attempts to isolate largely American trend lines, based upon the literature as a form of delimitation and definition. Phase II was undertaken by a selected group of students at the Naval War College at the direction of the Chief of Naval Operations.

The purpose of Phase II of The Long Range-Future of the Navy Study is to determine not only what principal trends are generally known and recognized as leading to the future, but also to identify what avenues of inquiry need further study and, specifically, what future research is required to clarify areas of doubt and areas of promise leading to a series of specific naval recommendations which might be eventually presented to the Chief of Naval Operations for his information and consideration. This further delimitation in futures would be the goal of a Phase III study.

*Phase I (AD 759 420)



PRICES SUBJECT TO CHANGE

ABSTRACT

THE LONG-RANGE FUTURE OF THE NAVY

This study is an analysis of current trends undertaken for the purpose of identifying those environmental factors which might impact on the Navy in the 1972-1985 time frame. The five environments considered are: international, sociological, corporate, technological, and military. The report is a continuation of "The Long Range Future of the Navy" study which began in the 1970-1971 academic year. Volume 1 contains essays on each of the environments mentioned above, as well as conclusions, implications for national security, and areas for further study. Volume 2 consists of key points, tentative implications for the U. S. Navy, and an epilog, all of which are oriented to future researchers at the U. S. Naval War College and follow-on phases of this study.

Multipolarity is characterized as the most likely international environment to evolve during the forecast period. Significant changes in the post-World War II alliance system and a decline in the relative importance of military power are predicted. From a demographic analysis of the United States, the availibility of the traditional teen-age recruit for the Armed Forces is seen to be decreasing, with persons 25-44 years of age being numerically dominant during the forecast period. A discussion of value trends and personal and social characteristics is also presented. The study suggests that the U. S. position of leadership in technology

is becoming less dominant, and problems relating to technology in the 1972-1985 time frame will be those of adoption rather than invention. The long-range planning structures of selected firms were evaluated in an attempt to identify successful methods of achieving goals and responding to change. A list of 58 crisis scenarios is examined to determine the impact of multipolarity on the employment of naval forces.

# FOREWORD

This study forms Phase II of a continuing effort to identify future world trends and their implications for the U.S. Navy. Phase I, completed in 1971, described major world futures without delimitation. This portion, Phase II, attempts to isolate largely American trend lines, based upon the literature as a form of delimitation and definition. Phase II was undertaken by a selected group of students at the Naval War College at the direction of the Chief of Naval Operations.

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R. F. Delaney

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# INTRODUCTION

Purpose. The purpose of this study is to identify those environmental factors which might impact on the Long-Range Future of the Navy. The year 1985 was arbitrarily selected as the end point of the study. This phase is a delimitation of the material contained in the Phase I report, completed last year. The conclusions and implications drawn are primarily oriented to those factors which are forecast to impact on national security policy in the future.

Method. Phase II of the Long-Range Future of the Navy research project is an interim step in the research cycle. The study is based on a literature survey and interviews with academicians, research institutions, and corporate headquarters. The areas selected for evaluation during this phase fall into five basic environments: international, sociological, corporate, technological, and military. The material was subjected to collation, analysis, group discussion, and distilled to identify trends and/or conclusions in each of the areas selected. Finally the material was collectively synthesized, and implications for national security policy were drawn. These procedures are in keeping with the direction provided by the Politico-Military Sub-Panel of the CNO Executive Panel.

Assumptions. The basic building block of this study is the international political environment. The political

spectrum of possibilities initially evaluated consisted of four possible worlds: world domination by a single power or bloc, cold war bipolarity, multipolarity, and world harmony. Primary emphasis was devoted to the multipolar world since it appears to represent the most likely international environment of the future. Time constraints precluded a detailed investigation of the other possible worlds.

The study does not represent any official point of view and makes no attempt to adhere to existing U. S. Government policy. Comments which allude to a changing force structure should be viewed with caution as they are based solely on the environmental influences projected for 1985 and do not consider worst case military threats.

Limitations. In its present stage the study is incomplete. It lacks economic analysis and a rigorous testing of major trend lines. This phase of the study is broadly oriented toward national security policy implications and not specifically to the U.S. Navy. No attempt has been made to project potential adversaries' technological or military capabilities which could face the United States in 1985. The development of probable U.S. national interests, goals, objectives, and strategies are considered among the next logical steps or phases of this study.

Report Organization. This report has been organized into two volumes. Volume 1 contains essays on each of the

environments mentioned above, and is comprised of seven parts. Part One contains a summary of the key points, conclusions, implications, and areas for further study. The essays and bibliography make up the remaining six parts.

Volume 1 is intended for both internal and external distribution as required. Volume 2, consisting of key points, tentative implications for the U.S. Navy and an epilog, is considered an internal working paper primarily for the use of War College researchers.

Part One--

SUMMARY OF FINDINGS

## CONCLUSIONS

1. The most likely international environment that will evolve over the next 13 years is one characterized by multipolarity or polycentrism.

Multipolarity implies a movement away from the bipolar world of the 1950's and early 1960's with its two power centers and lack of mobility and flexibility in alliance systems to an environment with several power centers and more flexibility of alignments. This will result from a continuation of political trends already discernible and underway. None of the power centers will be able to dominate all of the others. The inherent flexibility of the multipolar environment will allow nations to maneuver in order to maintain a balance of power.

2. The major power centers will be the United States, the Soviet Union, China, Western Europe, and Japan.

Although in terms of strategic and possibly even conventional military forces, the United States and the Soviet Union will be essentially superior to the other power centers, the economic and political strength of several nations or groups of nations will cause the international environment to be truly multipolar. The relative position of China (PRC) and Western Europe with respect to the other power centers will depend on the pragmatism with which the former charts her course in the international arena and the latter's success

in achieving an increasing degree of economic integration and political viability. There is little doubt that Japan will continue to be strong economically, but her overall "power rating" will depend on her decision with regard to the size of her military forces and her assured resource base.

3. The likelihood of major military conflict between power centers is low.

This low likelihood, however, should not be ignored since the danger of miscalculation of intentions or objectives could lead to the outbreak of hostilities. A major conflict is defined as a nuclear war or a situation short of nuclear war which leaves the use of nuclear weapons the only alternative for the loser. The above projection is premised on the maintenance of a credible strategic deterrence. Limited wars between smaller powers will continue, and covert assistance by large powers in revolutionary wars will continue. Overt military intervention by large countries into the internal affairs of smaller nations within their spheres of influence will occur less frequently than in the past because of the rise of nationalism and the ability of countries to migrate to other power centers.

4. The recognition that the United States cannot carry the burden of defense of the Free World will continue as a tenet of U.S. foreign policy for the foreseeable future.

Since foreign policy goals, domestic concerns, and

military capabilities must be synchronized to avoid a national incapacity to implement policy objectives, it will be necessary to continue to trim the scope of U.S. foreign involvement. With heavy reliance on allies a problem in itself (in the multipolar era, political and military support by allies may be uncertain), the United States will be hard pressed to maintain a credible flexible response strategy which calls for adequate forces to meet any level of conflict without the necessity to escalate. There will be gaps on the conflict scale which will not be adequately covered. Astute diplomacy will have to replace military capabilities in certain levels of confrontation and in certain geographic areas.

5. The post-World War II alliance system is undergoing, and will continue to undergo, significant changes.

By 1985 the pattern of alliances and power alignments that have evolved since World War II will have undergone a notable transformation as nations perceive either a changing or diminishing threat to their security, as technological and sociological innovation occurs and as the economic situation changes. These factors, acting alone or in concert, will cause some of today's alliances to weaken or to dissolve, while other trends may reinforce and make stronger existing groupings, especially in the nonpolitical, nonmilitary areas. The raison d'etre of most alliances and international organizations will continue to be security and economic development.

The fear of world domination by nations under the direction of communism will wane as a raison d'etre for alliances.

6. The use of military force will decline in importance relative to other elements of national power, particularly the economic and political.

The United States will attempt to play the Soviet Union and China against each other so as to gain concessions and to avoid the ultimate big power confrontation. More reliance will be placed upon political maneuvering than upon the use of military force. Domestic pressures will most likely not favor the use of military force unless U.S. vital interests are at stake. Europe will benefit from the growing accommodation between the United States and the Soviet Union which will be forced upon the latter by the former's flexibility to maneuver and the latter's need for frontier security. Faced with the Chinese on their eastern front, the Soviets will attempt to decrease tensions in Europe. As new economic powers emerge and consolidate on the international scene, increased market and financial competition can be expected.

7. Defense budgets will be highly constrained because the perceived military threat will be less and domestic concerns will assume greater importance.

As the U.S. populace and Congress become accustomed to the multipolar environment, military threats to security will seem less menacing than they were in the bipolar era.

It will become harder to justify defense appropriations, particularly for forces to project U.S. power overseas. Military budgets will face increasing competition from requirements for Federal funds to improve the quality of American life.

8. Availability of potential recruits for the armed services will decrease significantly during the 1975-1985 time period.

While most population age groups in the United States will increase in size during the forecast period, the absolute number of 15-24 year olds will decline between 1975 and 1985. By 1985, the number of 15-24-year-old males will exceed the 1970 figure by less than one million at a time when total population will have increased by about 47 million. Thus, the relative number of youths who have traditionally been potential military recruits will be significantly diminished. Changing individual and societal values will, in many cases, run counter to military traditions and reduce the attractiveness of a military career. In addition, the civilian sector will offer fringe benefits which compete very effectively with those provided by the military.

9. Emphasis in the United States will continue to shift from the manual laborer to the knowledge worker.

Efficiency in the performance of the manual laborer was, in the past, the principal problem of organization. Predominant was the manual and production line laborer who did

what he had been told to do. The center of this emphasis is shifting. The personal requirement for increased self-fulfillment and the complexity, importance, and speed required in the making of modern decisions will place a premium on the skilled, educated knowledge worker.

10. The U.S. position of leadership in world technology is becoming less dominant.

Future breakthroughs in technology may come from outside as well as inside the United States. In certain military technology, the intellectual gap between developed and lesser developed nations may become very narrow. The capability of smaller nations to do great harm is increasing. Available scientific know-how, if concentrated in the upper range of the military technological spectrum, will allow underdeveloped nations to produce a limited number of highly sophisticated weapons and delivery vehicles. Smaller nations may also acquire the capacity to improve on weapons given them by more developed nations. The United States may be in for surprises when innovative technology comes from unexpected sources.

11. During the period studied, change in military technology will continue to be rapid, and major improvements in weapons systems can be realized.

Providing that sufficient R&D resources are made available, significant advances can be made in laser weapons, liquid propellent gun systems, gun projectiles with terminal guidance,

microminiaturized avionics, high strength and heat resistant metals, weather control, and remotely piloted vehicles. Of these, laser weapons have the greatest potential for revolutionizing warfare.

## IMPLICATIONS FOR NATIONAL SECURITY

1. Greater stress will be placed on the integrated use of all elements of national power to achieve national objectives and settle international disputes.

The challenge of multipolarity lies in effectively orchestrating all the elements of national power of which military force is but one. The various elements (e.g., diplomatic, political, economic, technological, demographic, educational, organizational, psychological, and military) must be well understood, and the shifting balance of their relative importance and utility must be well understood in order to meet this challenge successfully.

2. Shifting from a bipolar toward a multipolar world environment changes the emphasis on some naval roles.

In spite of the shift toward multipolarity, there will be a continuing need to provide nuclear deterrence, primarily against the Soviet Union. The triad concept will likely remain, and the Navy's contribution in the form of SLBM's will not change significantly. However, there will be a reduction in the use of forces for power projection ashore and an increase in the use of naval forces for overseas presence and interposition. In some world areas smaller, expendable ships will be required to give national decisionmakers a greater number of options. In a given crisis the presence of a large combatant might overwhelm the situation, and the loss of such a ship

could have serious diplomatic repercussions.

3. The current NATO strategy of flexible and forward defense needs to be reexamined.

As a result of the general lessening of Soviet-American tension, it is likely that the Western European nations will shift perceptibly away from a strict alignment with the United States. This shift is encouraged by the likelihood that the American commitment to NATO will decrease in credibility on both sides of the Atlantic as the Soviet nuclear and conventional capability increases. The NATO strategy must be viable within this political context as well as feasible from a logistical point of view. There may be a need to reinforce NATO rapidly as a deterrent measure, but if deterrence fails, it is not likely that additional reinforcement or resupply can be accomplished in the hostile environment of either a nuclear or conventional war.

4. Limited defense budgets will increase emphasis on efficient management of technological change, and better identification of the military with national objectives will be necessary to justify those budgets.

Rapidly changing technology and the wide range of choices in military hardware will force the United States to adopt a strategy of technology in order to maximize return on defense spending. Increasing competition for Federal funds in a multi-polar world environment will require the military to deemphasize

its power projection role and assume responsibilities in areas of greater societal concern such as environmental control policing of ocean areas, education, and disaster relief.

5. Traditional force improvement concepts will no longer be valid, and future development will be driven mainly by politico-military considerations.

Future capabilities of the armed services must be oriented toward politico-military objectives and not just military objectives alone. In some cases, the political advantages offered by a weapon system may outweigh its military disadvantages. Quantity may be more desirable than quality.

6. Increased cost of manpower, competition with the civilian sector for manpower, and changing societal attitudes toward work will force greater emphasis on substituting capital for labor in the Armed Forces.

Cost and demographic trends during the forecast period will be powerful incentives for reducing military manpower. These incentives will be reinforced by the continuing shift in emphasis in the United States from the manual laborer to knowledge worker. In addition, the pressure for more leisure and discretionary time as well as a clearly defined purpose for work will require the Armed Forces to reappraise their use of people. Military functions which can be performed adequately by machines should be automated, leaving humans free to think and perform higher level operations of control and decisionmaking. The U.S. lead in computer technology must be exploited.

## AREAS FOR FURTHER STUDY

1. The shifting balance of the elements of national power and the unique contribution that each provides to national power.

Which aspects of each element can be substituted for another element of national power? When can economic power replace or be used in lieu of military force?

2. The future internal situations in the Soviet Union, China, and Japan.

What will be the Soviet socio-politico-economic picture in relation to the rate of growth, consumer pressure, and defense spending? What are China's prospects for rate of economic growth and post-Mao political stability? Will Japan develop nuclear weapons, change the nature of her self-defense forces, change her political organization, or redirect her trade pattern? Will Japan be able to secure her resource base?

3. The future situation in Western Europe.

Will the basic interests of France and West Germany be divergent or compatible? What will be the effect of an enlarged European Economic Community? What are the prospects for developing political commonality? What will be the future trade patterns and economic growth rates? And how will these factors affect the U.S. politico-economic posture?

4. The future status of "middle powers."

Will such countries as Brazil, India, and Indonesia become

power centers? Can Brazil develop the political infrastructure to match her economic development? Can India solve her poverty problem?

5. The political and economic effects of arms limitation agreements.

Will such agreements create a rising expectation for a peaceful world? Will this expectation be dangerous in terms of miscalculation and less support for military readiness?

6. The impact of limited natural resources on world futures.

Is the thesis in "Limits to Growth" basically correct or is it like the population predictions of some alarmists? Will zero growth rates be the norm of the future? What effect will this have on arms production and the arms race? Will this condemn underdeveloped countries to remain in that state, and with what political results? What role can technology transfer play in improving the situation?

7. The future of U.S. defense industry.

Will environmental influences and domestic pressures affect costs and development of weapons? To what degree will the defense industry become dependent on foreign suppliers? What alternative methods of contracting and procurement are available? What form should the relationship between government and defense industry take in the future? What are these relationships in other countries?

8. The future evolution of world trade patterns and economic interdependency.

What will be the economic relationships between the five power centers? What will be their rates of growth, resource requirements, and trade patterns? To what extent will economic interdependency act as a stabilizing or destabilizing force in world affairs?

9. The effects of continuing changes in human value trends.

To what extent do the personal and social characteristics of members of the armed services coincide with the institutional values of the military and with the personal and social characteristics of society? What are they? How will the goals of special and vested interest groups of increasing size blend with the traditional voices of conservatism?

Part Two--

# THE INTERNATIONAL ENVIRONMENT

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# INTRODUCTION

It is often said that the only thing that does not change is change itself. However, in international politics various cause and effect relationships can be observed and, barring catastrophic events, the continuity of a steady progression of cause and effect relationships can be assumed.

The bipolar cold war political environment which followed World War II is now rapidly giving way to a new political environment of multipolarity. The recent shift in American policy toward the People's Republic of China is a dramatic action which reflects the passing of the bipolar era. Now the international system is in a period of readjustment in reaction to that major political act. However, the shift in American policy had been foreseen for several years by many observers and came as a result of observable trends reflected in a series of less dramatic actions by the various international actors. President Nixon may have speeded the process away from bipolarity and toward multipolarity, but the shift would have eventually been made by an American President. The Nixon Doctrine with all that it connotes is similarly based on political, military, and economic realities and will therefore remain in effect for at least the period covered by this paper.

No political act occurs in a vacuum. The shift in American policy toward a multipolar environment was a national reaction

to various political, military, and economic acts and trends. In turn, major readjustments within the international system to the new triangular relationships between the Soviet Union, the United States, and the People's Republic of China are already occurring. These adjustments can be analyzed, the various trends can be conceptualized, and projections for the political environment covering the next 13 years can be made.

It must be remembered, however, that nothing is really inevitable in world politics since human beings, with all of their unpredictableness, can and do shape and cause the events of history. Political trends are often broken by the unanticipated actions of men. Contrary to Marxian determinism, the course of history is not predetermined. We cannot predict the course of history or analyze current policies in terms of any exact science such as that claimed by communism. The realm of world politics is inexact and the projection of political analyses into the future is even more inexact. With these limitations in mind, the following projection of the most probable course of world politics is presented.

Less probable or alternate possibilities of the future political environment must also be conceptualized in order to ensure that the Navy is structured in such a way as to minimize the risks involved in the event the most probable course of events does not, in fact, evolve. Three such political possibilities have been formulated. They cover the spectrum ranging from general

hostility to general cooperation. They are only representative of the infinite number of possibilities which could be presented, time and talent permitting. Since they do cover the general range of conceivable possibilities, they may appear to be the extremes of pessimism or optimism. However, they were selected in order to provide sharp contrasts for purposes of comparison and conjecture concerning the roles and missions the Navy might face in the future.

The factor which will determine the overall degree of hostility and confrontation existing in the world over this time frame will be the degree to which the political goals of the United States, the Soviet Union, and the People's Republic of China are in harmony or in conflict. If the national interests of these three nations cannot be accommodated, the world political environment will evolve somewhere along the hostile end of the spectrum. If the national interests of these three nations can be accommodated, the international system will continue to evolve away from the hostile end of the spectrum.

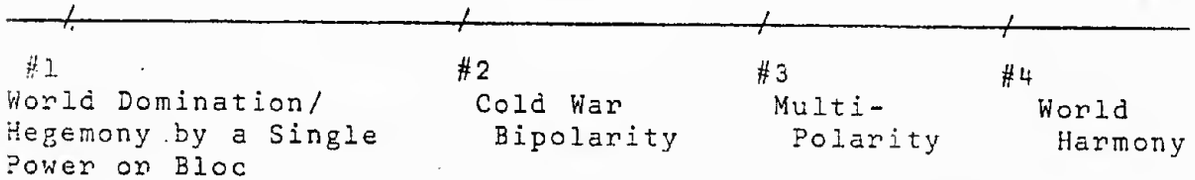
Many other factors will contribute to the direction which the world political environment takes. These could include possible technological breakthroughs by one superpower to the achievement of a credible first strike capability, the increasing economic gap between the "haves" and the "have-nots," the future of nuclear weapon proliferation, and the future political courses of Western Europe and Japan. However, the determining

factor will likely be the interactions of the national interests of the United States, the Soviet Union, and the People's Republic of China. The triangular relationships of these three nations are, and will continue to be, the critical determinant of world order and security.

* * * *

POLITICAL SPECTRUM

HOSTILITY COOPERATION



## POLITICAL POSSIBILITY NUMBER ONE:

## WORLD DOMINATION/HEGEMONY BY A SINGLE POWER OR BLOC

The most extreme outlook would envisage a future world in which a single power or power bloc achieved domination or hegemony over the entire world. This control over the world could be exercised directly or indirectly. There are several possible--but not probable--ways in which such a political situation could be achieved in the modern world.

World domination could become a reality as a result of a nuclear world war. The power center achieving domination or hegemony as a result of the war need not be one of the participants. It could be a third party, which escaped the holocaust and took advantage of the situation to gain and assert political domination or hegemony over the prostrate participants and the rest of the world. On the other hand, one of the participants in the world war could become the dominant power center as a result of its achieving a decisive victory without suffering destruction.

It must be the policy of the United States, and within her capability--in terms of civil defense, command and control, force structure, and dispersal of forces--to survive a nuclear exchange and carry on a "broken-back" war after the initial strategic strikes. If deterrence fails, the United States must be able to deal with the aftermath of a nuclear exchange in order to survive as a viable entity.

There are many ways in which a general nuclear war could occur. It could be triggered by complete miscalculation or tragic accident. It could come as a result of a general rising in tensions with one nuclear power sensing that its back was to the wall and that it must initiate a desperate gamble in order to arrest a deteriorating situation. A general nuclear war between the superpowers could also be initiated by a third state actually using its minor nuclear strike capability for its own purposes.

General nuclear war could also be initiated as the result of a conscious, rational decision made by a government which feels that it has achieved a preemptive first strike capability. Such a first strike capability could be achieved by a technological weapon system breakthrough which renders ineffective an opponent's strategic capability.

World domination need not arise from the ashes of a general nuclear world war. If one power center does achieve a credible first strike capability, it could gain either domination or hegemony merely by demonstrating its superior strategic position and then utilizing nuclear blackmail. The dominant power could rely on its technological superiority by maintaining its lead in the race, or it could actually force inspection measures upon the rest of the world to ensure that its technological advantage is not eliminated.

Immediately after World War II the United States held a

preponderance of military power as a result of her monopoly of nuclear weapons. The American strategy was to maintain technological and strategic weapons systems superiority. The United States did not force the rest of the world into accepting American domination or worldwide hegemony. She could have attempted to gain world domination by means of nuclear "blackmail," followed by rigid inspections to ensure the retention of the nuclear monopoly. However, this was unacceptable national policy. Would the Soviet Union or China exploit a similar relative position of military power in a bid for world domination? The answer to this question may very well be in the affirmative.

## POLITICAL POSSIBILITY NUMBER TWO:

## COLD WAR BIPOLARITY

This possibility envisages a return to the generally hostile environment of the cold war era of international politics. If it occurred at all, China and the Soviet Union would probably resolve or downgrade their ideological and other differences in order to provide a united front to the rest of the world. Such a monolithic Communist bloc actually did not exist in the 1950s, although the United States perceived it and acted as though it did.

This situation is unlikely since the Sino-Soviet differences probably will not be resolved regardless of who succeeds Mao Tse-tung. Chinese irredentist tendencies and the natural conflict of national interests between two great powers having an extensive common border will probably preclude such an accommodation. These divisive factors will exist regardless of their ideological positions. In fact, their ideological differences only exacerbate the tensions arising from their differing national interests. The ideological positions of these two antagonists have been flexible over the years, but their national interests have remained competitive.

A Sino-Soviet rapprochement could occur, however, if the United States acts in such a manner as to force China and the Soviet Union closer together. During the 1950's the United States acted as though there existed a monolithic Communist bloc

and, by so doing, actually diminished the extent of the Sino-Soviet split. The United States could make the same mistake in the future.

One way in which such a mistake in American policy could take place is via a future "Cuban missile crisis" confrontation (possibly over the Middle East) in which the United States is forced to back down as a result of an inferior strategic and conventional force position. If Soviet leaders should issue a public ultimatum to the United States and if the American Government is forced to accept a humiliating political defeat, the American public could very easily lump all Communists together in the hue and cry for political revenge and for a vast increase in military forces. Such a humiliation may, it has been argued, be the catalyst causing the American people to reverse the downward trend in American security forces. However, if it also results in a return to the false policies of lumping the Soviet and Chinese regimes together as common enemies in an atmosphere of an active "rollback" of communism, then the overall result would be counterproductive.

Conceivably, a return to the hostile environment of bi-polarity could come about as a result of other bloc combinations such as the United States and China versus the Soviet Union, or the United States and the Soviet Union versus China with the medium powers also taking sides. However, these two combinations are extremely unlikely because of ideological and national interest

differences.

If a conventional war erupts between the Soviet Union and China, the United States may be forced to choose sides. However, one option for the United States would be to steer clear of such a confrontation, maintain a triangular relationship (in this case probably "strict neutrality"), and attempt to stop the hostilities before either side could gain a significant advantage which might lead to even greater disequilibrium.

The bipolar world could result from such a Sino-Soviet war in which one side is the clear victor and the loser is forced out of the international power equation. The bipolar world could also result from the disintegration of either China or the Soviet Union from internal pressures, perhaps covertly assisted by outside powers. The population, nationality, economic, and management problems facing the Peking regime could result in a decentralization or even a chaotic disintegration of mainland China. The Soviet Union has serious nationality problems among the non-Russians. In both countries the traditional methods for the transfer of state power are violence prone. A struggle for political leadership could result in civil war and the possible intervention of the other power.

It would not be in the American interest to see the disintegration of either the Soviet Union or China. The chaos resulting from such a turn of events could be more dangerous to

world peace than their continued existence. Outside powers could be tempted to take advantage of the chaos. Military intervention might take place. A power vacuum involving hundreds of millions of people would occur. The threatened regime or faction might well strike out with nuclear weapons at the opposing major power, at an internal enemy, or at a third party such as the United States. Even if a stable bipolar situation did arise from the initial explosive circumstances, the political flexibility of the multipolar world would be lost. Political flexibility is inherently preferable to inflexibility.

## POLITICAL POSSIBILITY NUMBER THREE:

## MULTIPOLARITY

Multipolarity or polycentrism implies a movement away from the bipolar world of the 1950s with its two power centers and lack of mobility in alliance systems to an environment with several powers and more flexibility of alignments.

Multipolarity is the most likely international environment that will evolve over the next 13 years. This will result from a continuation of political trends already clearly observable.

This possibility is discussed in great detail following the brief description of Political Possibility Number Four: World Harmony.

## POLITICAL POSSIBILITY NUMBER FOUR:

## WORLD HARMONY

Although this possibility is extremely unlikely during the period under examination, cooperation could arrive in a number of ways. It could result from a growth of functionalism on a worldwide basis or from a growth of regional organizations with a resultant decrease of nationalism. This is the concept of world peace through international law. It is unlikely, however, since states are reluctant to surrender any of their vital sovereign rights, particularly the crucial one of the right to engage in armed conflict (usually called the "right of self-defense").

World harmony could also result from the functioning of an effective world government or supranational organization with enforcement powers. This will not come about by the natural evolution of the current world organization, the United Nations, because of its inadequate structure and lack of effective enforcement power. It would probably have to arise from the ashes and the shock of the aftermath of World War III.

World cooperation could also owe its existence to a common threat or threats perceived by the major governments arising from political, economic, social, technological or ecological problems.

In this situation, collective security would be a reality. Binding arms control and disarmament agreements would have been

reached with effective international supervision. National military forces would be utilized for internal law and order and for operating under the authority and control of the supra-national organization to maintain world peace.

World harmony is unlikely because of conflicting ideologies, conflicting national interests, the persistence of strident nationalism, and the increasing economic gap between the developed countries and the developing countries.

## DETAILED DESCRIPTION OF POSSIBILITY NUMBER THREE: MULTIPOLARITY

Introduction. The most likely international environment that will evolve over the next 13 years is one characterized by multipolarity or polycentrism. Multipolarity implies a movement away from the bipolar world of the 1950s with its two power centers and rigid alliance systems to an environment with several power centers and more flexibility of alignments. This will result from a continuation of political trends already clearly observable.

Although in terms of strategic, and possibly even conventional military forces, the United States and the Soviet Union will be essentially superior to the other power centers, the economic and political strength of other nations or groups of nations will cause the international environment to be truly multipolar. None of the great powers will be able to dominate all of the others. The inherent flexibility of the multipolar environment will allow nations to maneuver in order to maintain a balance of power.

The international system is in transition from the apparent zero-sum situation of the bipolar era to one containing non-zero sum and shared sum elements. In other words, under the strict bipolar system, any perceived gain for one side was usually perceived as a loss for the other side. While the current international system is still dominated by such situations, many

other situations are developing in which a gain for one of the power centers is not inevitably a loss to any or all of the others. Some activities by a power center will benefit all of the others, such as environmental protection programs. Some political, economic, and even military activities by a power center will benefit not only that power center, but also certain other power centers. A gain in influence by one power center will not necessarily be a loss of influence for certain other power centers.

There will be a continuation of, but a decreasing interest in, competitive coexistence and detente. This implies the existence of forces tending to promote cooperation and mutual toleration as well as those leaning toward confrontation and conflict. If the latter should become dominant, the situation will deteriorate to one of open conflict, while a clear superiority of the former will lead to cooperation and ultimately entente. The ever-present possibility that the forces tending toward confrontation and conflict will become predominant distinguishes coexistence from cooperation. Thus, when the cohesive and divisive forces are of relatively equal strength, an equilibrium state of "coexistence and peaceful competition" occurs. The existence of such a state is forecast with a continuing diminution of the tension between those forces tending to unite and those tending to separate.

Nations will continue to be the principal actors on the

international scene. Increasing social, economic, and even military interdependence may prompt independent countries to form regional or functional organizations, but in the nation-state system which we have today, and will continue to have at least until the end of the century, world affairs will be carried out on a state-to-state basis.

There is almost no reason to believe that world government will become a reality prior to 1985. Governments, reflecting the will of their subjects, generally are not prepared to renounce a significant portion of their sovereignty in favor of a supranational organization.

The major power centers will be the United States, the Soviet Union, China, Western Europe, and Japan. To distinguish between power centers and other popular labels, the following definition by William Fox in his book, The Super-Powers, applies:

> There will be no fewer than three and no more than seven great powers. Within this group, there will be "world powers" and "regional powers." These world powers we shall call "super powers," in order to distinguish them from the other powers which may enjoy the formal and ceremonial prestige of great power status but whose interests and influence are great in only a single theater of power conflict.

Clearly the United States and the Soviet Union are world powers. It is felt that by 1985 China will have made sufficient inroads in the underdeveloped world as well as having developed a basic economic infrastructure to be considered an emerging world power. For purposes of this paper, the United States, the Soviet

Union, and China will be considered superpowers, while these three nations plus Western Europe and Japan will be labeled regional powers or power centers.

The relative position of China and Western Europe with respect to the other power centers will depend on the pragmatism with which the former charts her course in the international arena and the latter's success in achieving an increasing degree of economic and political integration. There is little doubt that Japan will continue to be strong economically, but her overall "power rating" will depend on her decision with regard to the size of her military forces and her assured resource base.

The possibility of a large-scale confrontation or major conflict between the major power centers would appear to be low. A major conflict is defined as a nuclear war or a situation short of nuclear war which leaves the use of nuclear weapons the only alternative for the loser. Even this low likelihood, however, should not be ignored since the danger of miscalculation of intentions or objectives could lead to a rapid rise in tensions or even an outbreak of hostilities at any time.

One danger during this period of transition from a zero-sum to a non-zero sum environment is that popular pressure groups and even some political elites may perceive certain policies and activities as non-zero sum in nature, i.e., as not presenting a loss of national influence or a threat to national interests, whereas the actual situation may have, in fact, a zero-sum nature.

In this period of transition, the intentions of another power center and the existence and seriousness of a threat to one's vital interests might be ignored, miscalculated, or seriously underestimated.

Barring a completely unpredictable technological breakthrough, it is unlikely that any one of the power centers will develop a preponderant first strike capability vis-a-vis the other four. A first strike capability is defined as the ability to launch an initial strategic attack causing such destruction to the enemy's strategic capability that he is precluded from launching an effective retaliatory attack. Although the so-called "balance of terror" will continue to exist, the number of nuclear and conventional weapons in the Soviet arsenal will be larger than the number available to any of the other major powers. Thus, should another Cuban missile crisis occur, it most probably will not be the Soviet Government that will be forced to back down.

The international system will not be without motion; it will be constantly evolving as the roles of some countries increase while those of others decrease. Because of differing and competing ideologies, national and cultural heritages, and national objectives, low-level military conflict will occur between one power center and a lesser power or between two lesser powers. Political, economic, and psychological conflict will occur, even between competing power centers, as nations seek to

achieve significant advantages over other nations in order to advance their own power, prestige, and ideology.

Emphasis will be placed on finding non military solutions to international problems. In fact, the military component in the national power equation will be downgraded in relative importance. The political, economic, demographic, technological, organizational, and diplomatic components of national power will assume greater importance in the multipolar era.

Overt military intervention of large countries into the internal affairs of smaller nations within their sphere of influence will occur less frequently than in the past because of the rise of nationalism, the impact of world opinion pressures, and the ability of countries to "migrate" to other power centers. Covert assistance in revolutionary wars will continue.

Nationalism will continue to exert a powerful influence on the conduct of world affairs. The forces of nationalism may weaken somewhat in the more developed Western countries or take on economic forms, but will become increasingly strong in the developing countries as they undertake the tasks of political unification and economic development. In the long term, nationalism will impede the spread of communism by both the Soviet Union and China, as well as diminish the cohesiveness of major blocs and alignments.

The gap in the standard of living between the citizens of the "have" and "have not" nations will continue to grow as will

the discontent of the inhabitants of the poorer countries. Until the recent past the people of the less developed countries (LDC's) were not fully aware of the relative affluence of their richer neighbors. Modern communications has shown the peasant of the LDC's that not everyone lives the way he does, and the revolution of rising expectations has affected and will continue to affect political and economic decisions in the developing nations. This influence will occur at precisely the time when the governments of these countries are attempting to limit consumption in order to invest in the capital goods necessary for industrialization and cope with population growth, the destabilization of urbanization, the institutionalization of the bureaucracy, rapid changes in values, and growing gaps of technology and education. This dichotomy between the demand for consumption goods and the need for capital goods, as well as the necessity to cope with the enumerated problems, will lead to increasing political instability and revolution in the countries of the Third World.

Rapid population growth, particularly in the LDC's, will continue to be a matter of concern. Population increases now consume more than half of the economic growth of the developing countries, and in 1985 the situation will be just as critical. Food production and education may not be able to keep pace with the rising populations. While widespread famine will be unlikely because of surplus agricultural production in the developed countries, many nations of the underdeveloped world will continue

to experience inadequate levels of caloric intake.

The fact that the rich countries of the world demand disproportionate shares of the world's limited resources contributes to this bleak economic forecast for many areas. For example, the United States with only 6 percent of the world's population consumes about 40 percent of the world's available resources. This is particularly significant when coupled with the estimate that by 1985 about 70 percent of the world's population will be found in underdeveloped countries. At the extremes, the per capita income gap between rich and poor nations was $3,000 in 1970; it could double, or even triple, by 1985. This situation is even more worrisome if the systems dynamic model developed by MIT and reflected in Limits to Growth is only approximately correct in its hypothesis that world resources could be exhausted by 2100.

The period under study will be characterized by continued international economic growth. This growth will essentially occur in countries accounting for approximately 50 percent of the world's population. China, other Asian countries such as India, Pakistan, et cetera, Black Africa, and certain areas of Latin America will not fully share in this economic prosperity. However, even in these regions, some advancement will be experienced.

The position of the United States as the world's dominant economic power will diminish as Japan continues her rapid economic development, as Europe becomes more economically integrated,

and as other lesser, but still important, economic powers emerge on the international scene. In an attempt to arrest her deteriorating position, the United States may exert political pressure on other countries in order to gain economic concessions. This diminution of America's relative economic position will be mitigated somewhat by U.S.-owned multinational corporations (MNC's) which will account for a significant portion of the growth in other countries. The MNC may well become the dynamic instrument in the growing international economy, but it may also become a matter of political and competitive concern.

By 1985 many of today's economic powers will have advanced to a postindustrial society, that is, one in which the service sector of the economy contributes more to the GNP than the industrial sector. The decline in industrial growth in these countries will be matched by greater industrial output by Eastern and Southern Europe, some Latin American countries, and certain countries situated in the Pacific area of Asia.

Although the dollar will remain the most widely used national currency in international transactions, its position and prestige will continue to decline. International monetary crises will develop which probably will lead more industrial countries to press for greater flexibility of exchange rates. It is likely that by 1985 a great deal more exchange rate flexibility will have been authorized by the International Monetary Fund or its successor.

As populations continue to increase, the worldwide demand for energy will rise rapidly. Nuclear plants, particularly of the "breeder-reactor" type, which produce more fuel than they use, will be required to provide increasing amounts of power for domestic consumption. Greater amounts of petroleum and natural gas will be demanded. Particularly in the case of the former, this increased world demand and absolute need could become a destabilizing force in that consuming nations, notably the power centers, cannot afford to permit internal disorder to interrupt oil flow. Such disorders could ultimately involve intervention by one or more of the major power centers. Energy sources and reserves will become major political and economic factors.

The search for additional sources of energy as well as food, will cause more emphasis to be placed on exploitation of seabed resources. Problems of legality, jurisdiction, ecology, and methods of extraction will have to be resolved in order to avoid possibilities of conflict as many nations vie for this rich source of scarce materials. Perhaps the Navy of the future will be assigned the task of controlling, or actually carrying out, the exploitation of seabed resources.

Regional Geographic Division. For the purposes of regional examination, the world may be conveniently subdivided into as few as three and as many as 10 or more areas. There is no best way to accomplish this task since there are many instances where

a given country geographically fits into one region, but politically operates and is accepted as part of another. Strict geographical division does not satisfy the requirements of this study. Therefore, the following terms and definitions are employed:

a) United States--the continental United States, Alaska, and Hawaii.

b) Soviet Union--the 16 Soviet Socialist Republics comprising the Union of the Soviet Socialist Republics.

c) China-- The People's Republic of China.

d) Europe--all states west of the Soviet Union, including Turkey, Cyprus, Iceland, Greenland, the United Kingdom, Ireland, and Canada.

e) Near East and South Asia--Eastern Mediterranean, including the Federation of Arab Republics (Egypt, Libya, and Syria) stretching through the Indo-Pakistan subcontinent to the Indian-Burma border.

f) Africa--all African states and territories less Egypt and Libya.

g) East Asia and Pacific--all states and territories of East and Southeast Asia and the Pacific excluding mainland China.

h) Latin America--all states and territories in the Western Hemisphere less the United States and Canada.

Alliances and International Organizations. By 1985 many alliances and power alignments that have evolved since World War II will undergo a notable transformation as nations perceive either a changing or diminishing threat to their security. The current and discernible trend toward multipolarity, as well as continuing technological and sociological innovation, will cause some present-day alliances to weaken or to dissolve, while other trends may reinforce and strengthen existing groupings. However, the raison d'etre of most alliances and international organizations will continue to lie in their usefulness in enhancing the security and economic development of their members.

Of the current major alliances, the fate of the Baghdad Pact (CENTO) and the Southeast Asia Treaty Organization (SEATO) is in doubt, and both may well disappear prior to 1985. CENTO's demise will be hastened by Turkey's emphasis on NATO for her defense, and by Pakistan's growing affinity for China and her perception of India, and not the Soviet Union, as her primary security threat. For these reasons, plus her desire for more international independence, Pakistan's interest in SEATO will continue to diminish.

The collapse of SEATO will also be aided by the French desire to pursue a more independent policy and by British military withdrawal from the area. Moreover, the ANZUS countries, the Philippines, and Thailand consider SEATO somewhat redundant

since they have other security arrangements with the United States.

Both the Warsaw Pact and NATO will evolve into somewhat less rigid and less firmly structured systems than they presently are. Each will realize that an attack by the other is less likely, and thus the main emphasis of each will be on political rather than military solutions to the European security problem. The Soviet Union and the United States will continue to dominate militarily their respective systems, but American political influence within NATO will diminish.

The political and social dimensions of NATO will come to dominate NATO's work during the next 13 years. NATO's Committee on the Challenges of Modern Society is already working on studies concerning sea and air pollution, automobile and road safety, and disaster assistance. Even the NATO military committees will come to devote much of their time and effort to practical matters of common concern which may or may not have a military connection. Although its military rational may weaken and economic competition with the United States may buffet the relationship, a strong continuing effort will be made to maintain NATO's essential structure.

Unfortunately, the United Nations will not improve its ability to carry out effectively two of its primary roles . . . peacekeeping and the settlement of international disputes. The Security Council will invariably become deadlocked in any crisis

involving one of the big powers or an ally or friend of one of the big powers. As illustrated in the recent Indo-Pakistan war, the General Assembly will be unable to do more than to make recommendations to the concerned parties, who will in most cases completely ignore such recommendations.

However, the United Nations will continue to play several important roles on the international political scene. It will still provide a public forum where any member state can air its grievances, and it will facilitate private discussion between disputants in any crisis situation. The specialized agencies of the United Nations will, in the next 13 years, play an even more important role in attempting to solve economic and social problems throughout the world. This mission is one which many of the underdeveloped countries see as the organization's most vital.

A recent trend that will continue to grow in importance is the distribution of economic assistance from the industrial nations through a multilateral organization to the developing countries. The role of the United Nations in this regard will increase significantly over the next decade. This system has the obvious advantages that the aid recipients are not required to give quid pro quo's for the assistance received, and the organization can effectively supervise the use to which aid funds are put.

The number and importance of regional organizations will

continue to increase during the period under study. The world as a whole has recently become more aware of the important contribution regional cooperation can make to economic and social development. Most Third World countries have neither the skilled personnel, the capital, nor the markets to enable them to develop utilizing only their own resources. Through regional arrangements, which provide for the pooling of these limited resources, and for the expansion of markets from a country to a regional basis, these developing nations can realize some measure of success in the difficult task of economic modernization.

Membership in the European Economic Community (ECC), or the Common Market, will increase over the next several years, but it is unlikely that a common currency or foreign policy will evolve. With the addition of Britain, Ireland, Norway and Denmark, which will probably occur during 1972 when their governments ratify entry, the ECC will be second only to the United States in terms of gross production. Membership in future years may be extended to Greece, Spain, Portugal, and even Israel. Although very unlikely, the membership of East Germany, Czechoslovakia, Poland, and other Warsaw Pact members cannot be completely discounted. The Common Market will continue to provide stiff economic competition to the United States, the Soviet Union, and Japan.

The Organization of American States and the Organization of African Unity will continue as viable institutions. The

former, in particular, will play an increasingly important role in resolving regional problems. Smaller regional economic groupings will be formed in Asia, Africa, and Latin America (in the face of the weaknesses of LAFTA) patterned after the Central American Common Market and the East African Economic Community. An exception to this pattern will be found in the Arab States where the need for economic cooperation exists, but where mutual suspicion and animosity will preclude such action. The recent federation of Egypt, Syria, and Libya will likely disappear long before 1985.

Functional organizations will make important contributions toward a lessening of world tension. International cooperation in such fields as ecology, space technology, et cetera, may help to achieve world peace through functionalism.

Strategic Arms Control and Disarmament. Despite the fact that the Soviet Union, the United States, and many other countries have spoken out in favor of strategic arms control, disarmament, and elimination of arms races, it is unlikely that any agreement eliminating the threat of nuclear war will be signed prior to 1985. An agreement is possible which could have political and/or economic significance, but an assured second strike capability will not be surrendered by any state.

Before arms limitation accords with significant military impact can be negotiated, progress will have to be made in two vital areas which have in the past precluded agreement on any major disarmament or arms control issues and will continue to do so in the foreseeable future. The first and most important problem is in the political arena where a lessening of world tensions must precede serious arms limitation bargaining. Nations increase their armaments because they feel insecure; therefore, before they will agree to disarm or control arms production, the causes of their insecurity must be removed. To date, some progress has been achieved in this area, but a great deal more will be needed prior to any significant agreements.

The second major impediment to success in arms limitation discussions is the issue of international inspection and verification. The Soviet Union has fiercely opposed the idea of an inspection of her facilities by foreign nationals. Notwithstanding the mutual advantages of nuclear disarmament, it is unlikely that meaningful advances will be made prior to

an agreement providing for reliable verification and control procedures.

It has been argued, with some justification, that surveillance satellites can gather the same information as on-the-scene inspections. This may be true to a certain degree, but it does not seem possible, for example, for a satellite to determine if missiles are equipped with multiple warheads. It appears this type of determination can only be done with complete certainty by on-site inspection.

Another factor impeding significant progress in nuclear disarmament or arms control is China's determination to develop a credible second strike capability. China certainly will not agree to any curtailment of her nuclear buildup until she has achieved this capability, which in her opinion, will give her an adequate strategic defense and the full independence she seeks.

Arms control and disarmament negotiations will continue to take place between the major power centers for any of several reasons. Such negotiations may be deemed useful by national leaders for economic reasons, for relaxing tensions, for their propaganda value, or as a stalling tactic to permit a unilateral arms buildup. However, the success of such discussions will be limited. Attempts will be made by the nuclear powers to legislate nuclear-free zones in the Middle East, Latin America, and Africa, but these efforts will not be highly successful. By 1985 such countries as Israel, Japan, India, West Germany, and Brazil may very well possess some type of nuclear armament.

The few arms control agreements that have been negotiated are not of major importance and have been weakened by the unwillingness of all the nuclear powers to adhere to them. Additionally, these accords can be unilaterally renounced. For example, the Nuclear Test Ban Treaty and the Nuclear Nonproliferation Treaty have not been ratified by China and France. Moreover, they both contain the unilateral withdrawal provision which declares that any party to the convention may "in exercising its national sovereignty" unilaterally renounce its provisions if an "extraordinary" event occurs.

In general, any major strategic force limitation agreement will follow, but not precede, a reduction in tensions between the major power centers. It is also possible that once world tension has been reduced, arms limitations will not be negotiated, but will be announced unilaterally by nations under increasing pressure from their citizens for a reduction in defense expenditures and for greater commitment to internal reforms. It is likewise possible that the lack of resources may force nations to control arms production.

The United States. The United States will retain world leadership in terms of gross national product, standard of living, and production skills. However, the United States will slip into second place relative to the Soviet Union in terms of strategic and general purpose forces. The American people will have to be made aware that the U.S. Navy, while not "second-rate," is no longer in the dominant position it has enjoyed since the end of World War II.

Since foreign policy goals and military capabilities must be synchronized to avoid a national incapacity to implement policy objectives, it will be necessary to continue to trim the scope of U.S. foreign involvement. The Nixon Doctrine and the "Total Force Concept" are steps in this direction. The United States will not be able to act as the "policeman" of the world. Clearly, the Nixon Doctrine, with its recognition that the United States cannot carry the total burden for the defense of the free world, will continue as a tenet of American foreign policy for the foreseeable future.

In the Secretary of State's foreign policy report to the Congress, dated 26 March 1971, the following statement was made:

> The President has stressed that the Administration's foreign policy is guided by three principles: partnership, strength, and a willingness to negotiate. Within this context, the Nixon Doctrine proposes an adjustment in both the security role and the responsibilities that the United States expects to assume in the years immediately ahead. What we seek is a reduction in U.S. military presence in certain areas, while at the same time helping our partners to develop their own self-defense capabilities. The two parts of the Nixon Doctrine are interdependent: as allies improve their defense posture, the threshold at which U.S. forces are likely to be called upon for support under existing treaty commitments will be correspondingly raised. (p. 167)

This policy is based on current realities. The United States will attempt to maintain, in conjunction with her allies, military forces capable of supporting a "flexible response" strategy. However, even with heavy reliance on its allies (a questionable assumption), the American Government will be hard pressed to maintain a credible flexible response strategy which calls for adequate forces to meet any level of conflict without resorting to escalation. There will be gaps on the conflict scale (ranging from counterinsurgency to nuclear war) which will not be adequately covered. Astute diplomacy will have to replace military capability in certain levels of confrontation and in certain geographic areas. Military force and presence as instruments of diplomacy will recede relative to their former importance and use in the 1950's and 1960's.

For its proper implementation, the Nixon Doctrine requires a large increase in American foreign military assistance. However, it is unlikely that Congress will substantially increase these programs. The emphasis of America's involvement in any future conflict will be on supporting her allies with materiel and training, but without the use of American combat personnel unless the country threatened is one of those exceptions listed in the following paragraph or, as indicated by the Nixon Doctrine, is an ally who is a victim of obvious aggression by a nuclear power.

The United States is not likely to intervene unilaterally with military force in most situations over the next 13 years. National attention, barring any future Cuban missile-type crisis, will continue to be focused primarily on domestic issues such as the economy, minority problems, ecology, et cetera. The antimilitary and anti-interventionist attitudes resulting from the Southeast Asian war experience will continue to exert pressure on the American Government. Public opinion--and foreign governmental opinion --will not favor unilateral interventions on the part of the United States. Probable exceptions calling for direct American intervention could be Mexico, Canada (French-Canadian problem), the Caribbean area, and possibly Israel. Covert operations or multilateral operations under the auspices of the United Nations or the Organization of American States may and probably will occur.

The United States will continue to play the Soviet Union and China against each other in attempts to gain concessions and to avoid any big power confrontation. The flexibility of the multipolar power situation will be to the United States advantage, especially since American military forces will no longer be superior to the Soviets. More reliance will be placed upon the ability to maneuver diplomatically about this triangular relationship than upon military force.

It is not inconceivable that the next 13 years will see occasions where the military forces of the United States will operate in coordination with those of either the Soviet Union or China in the protection of common interests. Perhaps, at some future date, the Soviet Union and the United States may find it in their common interest to have a joint task force operate in a third country's nuclear weapon testing area in order to retard nuclear proliferation or to pressure that country into signing the Nuclear Test Ban Treaty. This example is merely speculative, but the political trends point to such joint operations as a distinct possibility.

Utilizing the maneuverability of the multipolar situation, the United States will continue to press for international agreements which tend to reduce the level of tensions in the world. Various arms control measures will be attempted and political accommodations will be reached over certain nonvital national interest areas and issues.

The number of overseas bases will continue to decrease and the level of American troops in Europe will be drastically reduced over the next 13 years. The United States will not revert to a "fortress America" strategy except in terms of the location of its military forces, but neither will it adopt a "forward" strategy. The emphasis will be on diplomacy, economics, and strategic mobility involving forces based on American territory.

The Soviet Union. During this 13 year period the Soviet Union will develop a capability to project her power overseas and may possibly attempt intervention militarily in an unfavorable environment. In other words, the Soviet Union may actually follow the United States in experiencing the limits of military intervention in the modern world. The 20,000 Soviet troops in the Middle East may be harbingers of future involvements of Soviet personnel in overseas conflicts.

The Soviet leadership will learn, if it has not already, that external intervention by overt conventional forces will more than likely be unsuccessful, because of the rise of nationalism, the accessibility to alternate sources of economic, diplomatic, and military aid, and the ability of nations to resist external overt intervention.

The Soviet leaders will continue to diversify their general purpose forces, possibly acquiring aircraft carriers. Their naval strategy will be one enabling them to have a flexible strategy supporting global economic and diplomatic interests. The strategy of interposition of Soviet forces between a crisis area and opposing naval forces will continue to be followed and refined.

The Soviet leaders will continue to stress the maintenance of a credible deterrent to a nuclear attack. They will not be able to achieve a first strike capability vis-à-vis the United States, but they will definitely maintain an assured second strike capability, i.e., the capability, even in retaliation, to destroy a significant portion of the opponent's population and most of its industrial resources. Additionally, they will maintain a significant "surplus" strategic capability in terms of numbers of missiles in order to retain a relative superiority over the United States for prestige and psychological purposes. These strategic forces will also be qualitatively and quantitatively superior to those of China.

Economically, Soviet leaders will continue to stress basic industrial and military development, but they will also increase output of consumer goods at a modest rate, thus providing an overall increase in gross national product. While facing serious economic dilemmas, the Soviet leaders will probably be able to have their guns while modestly increasing the amount of butter that the consumer receives. While being very careful to avoid overdependence on foreign commerce, the Soviet leaders will continue to expand Soviet trade with the non-Communist world. Even though their merchant marine will grow measurably in size, as will their transoceanic trade, the Soviet Union will remain basically a continental power. This lack of dependence on sea lines

of communication is a tremendous political, economic and military advantage to the Soviet Union compared to the non-Communist world and the Soviet leaders intend to maintain it.

Politically, the Soviet leadership will continue to give lipservice to the idea that communism will eventually dominate the world. However, no Soviet leader feels that it will occur in his lifetime. In this respect, they have returned to the Marxian concept of an unhurried progression of stages along the path to communism as opposed to the concept held by Lenin and Trotsky of an elite party being able to accelerate the growth of world communism. When Stalin decided to develop socialism (and then communism) first in one country (Russia), the concept of the nation-state took precedence over the concept of ideology and subverted the ideology. Today no Soviet leader would consider risking the national interests of the Soviet state in order to advance communist ideology. Caution will be all the more necessary because of a nationalistic China along an extensive common border. The Soviet leaders will be cautious in their outlook and will continue to condemn "adventurism."

However, the Soviet leaders will be quick to take advantage of a weak or conciliatory opponent when circumstances are favorable. They will continue to strive, albeit cautiously, for influence throughout the world, particularly in the Middle East and in South Asia. They will place heavy

emphasis on an attempt to encircle and contain China. The Soviet Union will agree to political accommodations with the West only when such agreements do not place her at a disadvantage. However, she will also be pressed to make certain accommodations with the West because of the Chinese threat. Therefore, from the viewpoint of Soviet interests, these accommodations, while not disadvantageous, may not be advantageous.

Because of the Chinese threat and the ability of the United States to maneuver between the Soviet Union and China, it is probable that the Soviet Union will come to some degree of accommodation with respect to Europe (mutual and balanced force reductions, final Berlin accords, East-West trade, increased autonomy for the East European states, et ceteria) in an effort to relax tensions on her western front.

China. It is generally conceded that one of the principal determinants of power is population, and none of the major powers of the world have a population of less than 50 million. Using this analysis, certain political scientists predict that China will inevitably become the most powerful nation in the world. If population were the only determinant of power, that analysis would certainly be true since China's population today is between 700-800 million and is increasing at such a rate that every 15 years the number of her citizens increases by an amount equal to the present population of the United States.

However, such an enormous population is not always advantageous to an underdeveloped country such as China. Increases in the gross national product are quickly consumed in providing only the barest of necessities to a rapidly expanding citizenry. Resources which should be used to augment the rate of capital investment are used to feed, clothe, and provide the rudiments of education to the masses. While this immense population may in the distant future provide the basis for China's rise to the position of the world's most powerful nation, nobody who is alive today will live to see the day. By 1985 China will have begun to develop the complex political, economic, and social structures necessary to carry her into the ranks of the superpowers.

China's post-Maoist leadership will adopt rational and realistic policies in a polycentric world. As she recovers from the Cultural Revolution and plays a more active international role, China will increase her influence throughout Southeast Asia, especially with respect to those countries with whom she shares a common border. Such Asian nations as Malaysia, Thailand, Indonesia, and the Philippines will jealously guard their sovereignty but will improve their relationships with Peking. Japan will also increase her contacts with China and may even assist the latter in solving some of her economic problems. China will increase her prestige throughout Asia, Africa, and Latin America by using her United Nations seat to champion the cause of the Third World and she will attempt to diminish the influence of the United States and the Soviet Union in those areas.

The basic causes of the Sino-Soviet rift will continue to exist, and the residual animosity felt by these two power centers will increasingly color their international policies. Since China will strive to avoid a serious military conflict with the Soviet Union, her irredentist claims to Outer Mongolia and other areas along the Soviet border which were lost through "unequal treaties" will not be realized. While a major showdown between these two powers is not likely in the next 13 years, the Chinese Government has publicly stated that there are "irreconcilable differences" between China and the Soviet Union which will preclude a rapprochement in the foreseeable future.

One of China's driving ambitions will continue to be the development of a credible second-strike nuclear capability. China's leaders believe that such a capability will give them the necessary latitude in their dealings with the other power centers. By 1985 it is quite probable that China will have developed this capability.

The vision of China sending mass armies far from her frontier is unrealistic for it ignores the tremendous logistical constraints faced by China. She has neither the capability to project her forces a long distance from her border nor the ability to support them. Thus, for the foreseeable future, China's military posture will be purely defensive with the exception of her ability and proven willingness to send conventional forces into neighboring states when she feels her security is threatened. During the period under study China will not attempt to recover Taiwan by military means.

Europe and Canada. Most probably, the countries of Europe will benefit from the growing accommodation of interests between the United States and the Soviet Union in the area. This accommodation will be forced upon the Soviet leaders by the ability of the United States to maneuver about the triangular relationships between the three superpowers. Faced with the Chinese on their eastern front, the Soviet leaders will attempt to decrease tensions in Europe.

As a result of the general lessening of Soviet-American tensions in the area, it is likely that the Western European nations will shift perceptively away from a strict alignment with the United States. This shift will also be encouraged by the fact that the American commitment to NATO will decrease in credibility as the Soviet nuclear and conventional capability increases. The current NATO strategy of flexible response and forward defense will become less realistic as American troops are withdrawn from Europe, except for token forces left behind to act as a "hostage" or tripwire force theoretically designed to assure an American commitment to Europe's defense.

The degree to which Western Europe will play an independent and important role in international politics will depend on the degree to which it integrates economically.

It is unlikely that the European Community will "spill over" into the political area, but there will be political overtones to the Common Market, including possible regional security arrangements. The Western European states will definitely retain their national identities.

Germany will remain divided. This fact will continue to be the major impediment to complete East-West reconciliation in Europe. The Federal Republic of Germany (West Germany) will continue to favor the recognition of one German nation comprised of two German states. There is some possibility that she may eventually be successful in that endeavor because of the general movement toward detente in Europe. There is also the strong possibility that the two Germanys will become members of the United Nations. West Germany may acquire a nuclear weapon capability in order to gain some independence from NATO so as to be able to pursue her reunification goal on a bilateral basis rather than within the NATO framework.

France will continue her independent military and political course while remaining generally aligned with the other Western democracies on crucial East-West issues. The French will continue to play the role of balancer and moderator in the European balance of power equation. The Soviet Union will continue to support France in this role in order to provide a counterbalance to West Germany and to bolster French resistance to American influence.

If France and West Germany do, in fact, go their separate ways, the chances for a regional military force arrangement to support an independent Western Europe on the political scene will be dim.

The United Kingdom will continue to draw down her military forces, particularly her navy. Her "special realtionship" with the United States will undergo some strains as a result of her entry into the Common Market, but it will continue to exist in some modified form. The United Kingdom will probably act as the bridge between the United States and the Western European Community as a result of this modified special relationship.

The states of Eastern Europe will rapidly increase their connections with the West. They will, however, be mindful of the practical limits imposed on their autonomy by the Soviet Union. Trade relations, cultural relations, and even political relations between East and West Europe will flourish. West Germany will provide tremendous amounts of investment capital in the Eastern European states. Tourist travel will flow steadily back and forth across the Iron Curtain. In fact, the term "Iron Curtain" will become a misnomer.

A possible destabilizing factor in this area could be the breakup of Yugoslavia after the death of Tito. Recent signs indicate that ancient rivalries and hostilities between the nationality groups comprising the Yugoslav state are still potent factors. Should Tito's death be followed by internal

chaos, there is a likelihood that Bulgaria will attempt to realize her irredentist claims to parts of Yugoslav territory (Macedonia). Moreover, following Tito's death, the Soviet Union might even resort to force in an attempt to draw Yugoslavia into her sphere of influence.

The Cyprus crisis will continue indefinitely into the future barring an unlikely relocation of one of the ethnic groups on the island. Cyprus will therefore continue to be a major impediment to full cooperation between two NATO members, Greece and Turkey.

Canada will continue to attempt to solve "the complex problem of living distinct from but in harmony with the world's most powerful and dynamic nation." (Canadian Government White Paper, 1970). In an attempt to assert her distinctiveness, she will often take slightly divergent positions from the United States on international issues, but this should be of no concern to the United States. Canada's major problem will continue to be her French-Canadian nationality issue. It is a distinct possibility that Canada will experience a political (perhaps violent) upheaval leading to a loosening of the political connection between Quebec and the rest of Canada.

East Asia and Pacific. Except for Southeast Asia this area shows great promise in terms of political stability with steady economic growth. The United States will continue to withdraw her military personnel from overseas bases in the area. This withdrawal should not create any serious degree of instability except in Southeast Asia.

Indonesia, comprising about half the area and population of Southeast Asia, is the bright spot of the region. She should continue to develop and perhaps may reach the status of a medium power during the period under examination.

It is difficult to predict the political future of the states now engaged in active combat on the mainland of Southeast Asia. From the U.S. viewpoint, the worst possible outcome would be the subjugation of the Republic of Vietnam by the northern regime. Hopefully such an outright Communist victory would not occur immediately after the final American withdrawal. If South Vietnam falls, Laos could easily follow. Cambodia would remain a political entity, but would be like a Finland at best and a Bulgaria at worst in relation to North Vietnam. Thailand, in such circumstances, would probably make some accommodation with North Vietnam and China and plot a neutralist course. Burma would likely be

able to remain in her neutralist course, and Malaysia and Singapore would be able effectively to resist any pressures from the north with support from the United States, United Kingdom, and the Soviet Union.

The most optimistic outcome for the United States would be the creation of a strong anti-Communist Republic of Vietnam acting as an effective buffer for the rest of Southeast Asia. In this case, Laos would probably continue as a scene of low-level conflict, while Cambodia and Thailand would remain firmly in the anti-Communist camp. A neutral South Vietnam is also a possibility.

The possibility of an effective coalition or regional alliance among the nations of Southeast Asia aimed at preventing the spread of Chinese-style communism is not overly bright. Local national enmities, together with their comparative economic weakness, preclude the nations of southeast Asia from effectively making a common cause against the expansion of Chinese influence without massive outside assistance. However, a remote possibility exists that the Soviet Union or Japan might provide such assistance. It is unlikely that the American Congress would provide the military assistance in the magnitude required.

The bright side of the coin is that the North Vietnamese and the Chinese will not have the capability to support prolonged insurgencies in areas separated from the mainland.

Thus, the island nations of the region will have some sort of buffer against communist expansion, although the threat will still exist as witnessed by past insurgencies in Malaysia, the Philippines, and Indonesia.

Singapore and Malaysia will continue their nonalignment postures while maintaining anti-communist policies. They will increase trade with communist countries and Singapore will service Soviet warships. Singapore will remain vital to the United States in terms of maintaining the ability to service American ships and keeping the straits open. The Soviet Union and the United States will come more and more to an awareness that they have a common concern and a common interest in the region in the containment of China.

Australia and New Zealand will continue to be dependable allies of the United States and will provide some measure of assistance to the other countries of Southeast Asia. While not presently promising, Australia might by 1985 increase her military manpower as American military power in the region decreases.

Although many Taiwan leaders, the majority of whom were born on the mainland, still dream of returning to their homeland, the prospects of a forceful reentry are indeed dim. It is likely that as more Taiwan-born (Chinese) leaders assume positions of responsibility the mainland tendencies will diminish. There is a likelihood of

instability, possibly even insurgency, as the indigenous Taiwanese who make up the majority of the population struggle to achieve political control of the island. Official U.S. statements recognizing Taiwan as part of China will probably work to the detriment of any Taiwanese independence movement.

The Philippines will maintain general harmony with the United States in political and military affairs. However, internal pressures in the Philippines will require that the United States reduce her military presence in the country and maintain a low profile economically and politically.

The Philippines will be attempting to assert her distinctness from her former colonial master. She will probably initiate relations with various Communist nations, and the island republic will frequently take slightly divergent positions from the United States on international issues. The United States will come to realize that the Philippines have a need to feel completely independent from the United States. One trouble spot that will more than likely flare up at some point over the next 13 years is the territorial dispute with Indonesia over Sabah.

South Korea should continue to advance economically, barring an outbreak of hostilities with North Korea. South Korean military personnel may become extensively engaged in military assistance advisory roles throughout Southeast Asia. Their anti-infiltration expertise and modern army techniques should prove valuable to other nations in the area. For the

United States the assumption of such a role by the South Koreans would be beneficial in terms of having Asians train and assist each other, maintaining a low American military profile in the area, and resisting communist infiltration and insurgency operations. North Korea will continue to stress the reunification of Korea under communist rule and will become more and more frustrated over the issue. It is unlikely that a major war in Korea will occur over the next 13 years because of the strength of South Korea, the continuing American commitment to the government in Seoul, and the disinclination of China to see an unnecessary outbreak of hostilities so close to her border. China is satisfied with the status quo on the Korean peninsula and will make that fact known to North Korea. North Korea will continue to play China against the Soviet Union in order to maintain a slight degree of independence and mobility, but her freedom of action will remain extremely limited.

Japan is already the third largest economic power in the world. During the next 13 years Japanese goods will flood the South Asian and Southeast Asian regions. A major question for Japan is the future direction of her military policy. At some point she will have to make a choice as to whether to maintain a "purely self-defensive" force limited to an anti-invasion, anti-infiltration coastal guard force or to build a navy capable of defending Japan from direct and indirect aggression on the sea.

Currently Japan relies on the American strategic deterrent. However, the credibility of the American commitment will be increasingly questioned, just as in Europe, as the Soviets gain clear superiority in strategic and conventional forces. Additionally, Japan will want to move toward greater assertiveness and pragmatism in her international relations. Intentionally or unintentionally, Japan will find herself thrust into the role of political, military, and economic counterweight to China in Asia. Therefore, it is considered very likely that Japan will opt for the broader definition of "self-defense" and build a navy capable of defending the sealanes north of Australia and east of Singapore. Additionally, she will opt to build a Polaris-type strategic missile submarine force, limited in size but armed with nuclear missiles. This will place her in the same relative position as France, possessing a force de frappe capable of ensuring that Washington does not sacrifice Tokyo in order to avoid destruction of American cities. She may even develop an ABM type missile defense as a deterrent to the destruction of her heartland.

Just as with France and West Germany, Japan will remain basically tied to the West in terms of economics, international politics, and representative democracy. Japan may engage in an active effort to organize a regional power grouping of the non-communist nations in East and Southeast Asia. However, the success of such a venture is unlikely

during the next 13 years because of the diverse goals of the nations in the region and their differing stages of stability and development.

The Trust Territory of the Pacific Islands (Micronesia) will have achieved a new political status. The United States will no longer administer Micronesia as a strategic trusteeship. The actual political status of Micronesia is under active negotiation at this time. It is predicted that the Micronesians will gain complete internal self-government with the United States being responsible only for Micronesia's foreign affairs and defense. It is reasonable to expect that the U.S. Government will obtain long-term base rights in the islands, perhaps in return for guaranteed economic assistance levels and other political concessions. The Mariana Islands District, presently one of the six districts of the trusteeship, will elect to separate itself from the other districts and opt for a closer association with the United States, leading ultimately to "reintegration" with Guam.

The only other remaining trusteeship, New Guinea (which will include the former Australian territory of Papua), will become independent during the period under examination. The scattered islands of the South Pacific will continue to remain non-communist and will continue to increase their mutual relationships and cooperation via the South Pacific Commission.

Near East and South Asia. Many startling political changes--and dangers--will occur in this diverse area over the next 13 years. The Soviet Union will be attempting to extend her influence throughout this area in order to contain the Chinese. The economic problems of the area are critical. The political situation in many of the area's countries is volatile.

In the Middle or Near East the Arab-Israeli conflict will continue indefinitely. On occasions, an uneasy toleration of Israel will appear to have emerged in the Arab States, only to have the level of tensions dramatically increase once again. The Soviet Union appears at this juncture to be overcommitted to the Arab cause, and this predicament may result in a drain on Soviet resources and manpower comparable to the American experience in Southeast Asia. If the Soviet Union finds this too debilitating, she may combine with the major powers in some agreement to limit arms support to the area. Unfortunately the participants in the conflict will not agree to an imposed big power political solution. If one is attempted, it will only sow the seeds for a future conflict in the area. The Arab-Israeli conflict will continue to be the most dangerous focal point for a direct Soviet-American confrontation. If American and Soviet leaders act nationally and intelligently, such a superpower confrontation should not occur.

It is considered likely that Israel has or soon will have the components for a nuclear warhead for her short range missile. It seems logical that Israel would not hesitate to use it on Cairo and other Arab cities if she were losing a war and in serious danger of being eliminated as an independent state. Israel cannot afford to lose a war with the Arabs.

The Arab States will not be able to accommodate their differences (boundary disputes, personal rivalries, and ideological differences) during the period under examination. Lacking the necessary unity, the Arabs will continue to be unable to defeat Israel.

Political instability will continue in the various Arab monarchical states such as those along the Persian Gulf because the economic benefits of the oil exploitation will not be equitably distributed among the people. The political situation in the Arab States will continue to be extremely fluid with the Soviet Union, Iran, the United States, and China maneuvering, each in her own way, for influence in the area. Iran will attempt to fill the vacuum created by the departure of the British from the Persian Gulf and will oppose politically, but not militarily, the entrance of any of the big powers into the area.

India will continue to be beset with problems. She may well find the dismemberment of Pakistan to be counter-productive in that the leftist, separatist Bengalis of West Bengal (Calcutta) may attempt to separate and join Bangladesh. However, India's nationality problems do not end with the Bengalis. There are deep ethnic rifts that continually endanger Indian unity. The Chinese could very easily encourage such dissension, especially among the Nagas in eastern India.

The caste system, though officially outlawed, will continue to impede India's economic and social modernization. Various social and religious customs will have to be overcome prior to any significant success in modernization. The population problem will not be solved within the span of 13 years. Famine will, however, be avoided by importing food, but malnutrition will exist.

The Kashmir situation, as well as the bitterness of Pakistan over the results of the recent war, will continue as a source of tension along the Indo-Pakistan border. Thus, the resources of both countries, already inadequate for their own development needs,will be spread even thinner to maintain military preparedness. In her external affairs, India will side more and more with the Soviet Union balancing as it were Chinese support for Pakistan. The Soviets will probably acquire some form of naval base usage on Indian territory and possibly may become mired in a counterinsurgency effort among the ethnic groups in India.

If India does not feel assured of Soviet nuclear protection against China, she may develop her own nuclear capability. She may also develop such a capability in order to remain independent of the Soviet Union. The India-China border will continue to remain a tension point.

Latin America. When discussing Latin America it is dangerous to generalize, since each country of the region is separate and distinct from every other. Despite this pitfall, however, it is necessary in a study of this sort to oversimplify the existing situation and to speak in some instances as if Latin America were a homogeneous grouping of similar countries rather than a heterogeneous amalgam of differing peoples.

In general, during the next 13 years most Latin American nations will remain friendly toward, and within the sphere of the United States (Cuba excluded), but they will continue to exhibit signs of greater independence from their neighbor to the north. While a prolonged war between major nations of the region is not forecast, minor irritations may lead to limited struggles between adjacent countries. These differences will preclude complete intraregional cooperation.

The United States will continue to be particularly concerned with the stability of Mexico, Central America, Venezuela, Colombia, Brazil, Panama, and the Caribbean. Should a friendly government in this area be seriously threatened by internal chaos or subversion, the United States will not hesitate to invervene unilaterally if the loyal

indigenous forces are unable to meet the challenge. Should a threat arise further to the south, a solution will be attempted utilizing the machinery of the Organization of American States, which will also be called on to arbitrate boundary disputes and other intraregional problems. It is unlikely that a major military threat to the United States will exist in the Western Hemisphere since the other power centers cannot overcome American hemegony in the region although they may be tempted to try.

Negotiations between the United States and Panama have thus far been unsuccessful in reaching an agreement on a new canal treaty, but an agreement is likely which will provide for the eventual restoration of Panamian sovereignty over the canal and its operations. This, however, will be a time phased solution. The feeling of nationalism in Panama is very intense. Unless the United States is willing to make several concessions in the treaty negotiations as outlined above, ill will and perhaps violence could erupt in the Republic. Panama may seek to improve her relations with other powers in order to gain political support for her position on the canal issue. Although not predictable, the United States may find it necessary to send additional troops to Panama to insure continued operation of the canal.

Revolution and violent changes of government will continue to be a way of life in several countries of the region, especially in those in which the economic and social training received by the military makes it, at least temporarily, the only stabilizing force in an otherwise chaotic environment. However, there will be exceptions. Chile, Uruguay,and Costa Rica will continue their well-established traditions of democratic and free elections. Chile will tire of her socialist experiment and return to the more customary ruling pattern. Brazil and Argentina, where military rule is hardly a tradition, will opt for civilian governments during the period being studied, but should the elected officials prove unresponsive to the popular demands for economic development, the military will again intervene. Peru and Ecuador may follow this path also, but it is likewise possible that they will become enamored with their leftist leaning military regimes and decide to retain that system of government. Venezuela and Colombia will continue their slow way to more or less stable democratic role; however, the possibility of military take-over cannot be discounted. Bolivia, Paraguay, Panama, the Dominican Republic, Haiti, Cuba,and the Central American countries, less Costa Rica,show little indication of rejecting their military or autocratic governments in favor of democratic systems. Mexico's one party democracy will endure for the foreseeable future.

It is quite probable that by the 1980's several countries of the Americas, including the United States, will have resumed diplomatic relations with Cuba and that the latter will have reoccupied her seat at the Organization of American States. This does not imply that Cuba will sever her close ties with the Soviet Union whose warships will continue to visit Cuban ports. Although there is little evidence that Fidel Castro will be overthrown or voluntarily relinquish control of the island, there is evidence to suggest that Castro's views on hemispheric revolt have mellowed to the degree that invasion or Bolivian type insurgency is not the most productive route to communism in the hemisphere.

Economic development will remain the number one priority for all the countries of the region. During the decade of the 1960's the gross national product of the region as a whole increased annually by more than 4 percent, but a population growth during the same period of 2.8 percent per annum, the highest rate in the world, has served to diminish the increase in per capita GNP to an annual average of 1 to 2 percent. This small increase is hardly of the magnitude demanded by the Latin American people.

In an effort to raise their standards of living, the Latin Americans will enter into a number of regional economic agreements more encompassing than the Central

American Common Market and the Latin American Free Trade Association; however, none of their attempts at economic cooperation will approach the sophistication of the European Common Market. Although by 1985 the region as a whole will still be considered underdeveloped, Argentina and Brazil amy develop to such a degree as to be considered medium powers. Such countries as Haiti, with an illiteracy rate of 90 percent and a per capita income of $70, and Bolivia, with 68 percent illiterate and a $90 per capita income, show no signs of escaping from their economic stagnation.

Economic and military assistance will be received from many sources, primarily from the United States and Western Europe. By 1985 most developmental assistance will be channeled through multilateral organizations requiring no political or military quid pro quo in return.

The military will continue to be the most important power center in the majority of the Latin American countries, and the army will be the dominant military service. The materiel used by the military will be, by United States standards, generally obsolete. Brazil and Argentina will continue to have the largest and most powerful military forces in the region. Because of the intense nationalism prevalent in Latin America, there will be no serious movement toward a regional defense force. The status and future of Puerto Rico may become a renewed problem by 1985.

Africa. Africa, as a whole, encompasses a region, ethnic groupings, tribal customs, and modernization problems so diverse and complex that they defy summary analysis. One of the few general statements that can be made concerning the continent as a whole (and this may not be true of South Africa) is that it will continue to be an area of chronic instability for many years to come. While a few countries of the region, e.g., Tunisia, the Ivory Coast, and Liberia, will show signs of political development, they will be overshadowed by the backwardness and lack of progress of the remainder of the continent. Advancement in the nation building process will be retarded by the inability to devise political institutions that survive individual rulers, the proclivity of the military to intervene in the political process and tribal and ethnic behavior which impede modernization. Violence is likely to continue in such countries as Nigeria, Chad, Sudan and Zaire, where periods of tranquil and progressive rule will be fleeting. Ethiopia may be an area of political violence and ferment following Haile Selassie's death.

Boundary disputes, internal rebellions and intraregional power struggles will lead to military conflicts among neighboring states. These conflicts will be at a low level

and of short duration since the countries of the area do not have the resources to support a prolonged struggle. Attempts will be made to settle these disputes utilizing the machinery provided by the Organization of African Unity. It is unlikely that any of the major power centers will militarily intervene in a conflict among African states, nor is it likely that any countries of the region will become actively involved in non-African wars.

The Republic of South Africa and Rhodesia will remain politically distinct from black Africa. Despite a great deal of pressure from the United Nations and adverse world public opinion, neither will renounce apartheid practices prior to 1985, nor will South Africa relinquish her control over South-West Africa (Nimibia). The policies of these two countries will foster a great deal of irritation among other African States, but, while covert subversion will continue, it is unlikely that overt military force will be used against either Rhodesia or South Africa.

The Portuguese can be expected to resist by all means available the pressure for the granting of outright independence to Mozambique and Angola. While extremely difficult to predict, Portugal, despite the countless United Nations resolutions favoring self-determination for all people, probably will not grant complete independence to her African colonies in the foreseeable future.

Although the need for foreign economic assistance in Africa can hardly be overstressed, the industrial nations have reduced their bilateral aid to the region as a whole, and this trend will probably continue. The United States, Britain, France, the Soviet Union, and Belgium have all reduced their assistance programs on the African Continent. Only China, in an attempt to substantiate her claim as champion of the Third World, has increased her aid to the region. Africa therefore, with one-third of the entire United Nations membership, will attempt to hasten the move toward multilateralization of aid through the world organization.

The African states have begun to follow the example of other areas of the world and have entered into regional economic organizations in an attempt to solve their developmental problems. The South African working arrangements, formulated by such diverse countries as South Africa, South-West Africa, Rhodesia, Mozambique, Angola, Lesotho, Botswana, Swaziland, and Malawi, were designed to promote cooperation in commerce and economic development and to indicate a willingness to disregard political differences in the interest of common improvement. During the next several years many more cooperative arrangements along similar lines will be entered into by states in this region.

An intense wave of nationalism will continue to sweep the continent for the foreseeable future. Each country, no matter how small, will strive mightily to maintain its independence *via-à-vis* its neighbors and the competing major power centers. It is unlikely that any nation will enter into any agreement that will derogate from its sovereignty. Despite periodic efforts, none of the power centers will be able to acquire military bases in sub-Saharan Africa.

Africa is the only major area of the world that willlikely remain free of nuclear weapons at least through 1985. Although every nation on the continent aspires to have a modern military force,none will reach its goal before the turn of the century. Militarily, South Africa will continue to be the most powerful state in the region, but she will refrain from using force against her neighbors unless provoked into doing so by countries supporting subversive activities within her borders in an effort to end her apartheid policy.

Part Three--

# THE SOCIOLOGICAL ENVIRONMENT

LCDR R. J. Schlaff

# INTRODUCTION

The value of any work on the future is not in deciding what will be tomorrow, but in deciding what is to be done today to insure tomorrow. That there will be one is certain--apocalyptic or otherwise. But it cannot be known and most certainly will be quite different from what now exists and from what is now expected. While tomorrow will happen in spite of what is done or not done, it will be what it is made. For the U.S. Navy--as for all--the question must not be "What will tomorrow be like?" but rather "How should tomorrow be made?" The answer lies in identifying the effects of those past decisions that determined the present--and using them to achieve required objectives. The importance of this decisionmaking places supreme emphasis on what economist and management consultant Peter Drucker calls the "knowledge worker." Drucker writes:

> . . . up to recent times, the major problem of organization was efficiency in the performance of the manual worker who did what he had been told to do. Knowledge workers were not predominant in the organization. . . . Today, however, the large knowledge organization is the central reality. In every one of them, including the armed services, the centre of gravity has shifted to the knowledge worker, the man who puts to work what he has between his ears rather than the brawn of his muscles or the skill of his hands.

It should be expected that emphasis in the United States will continue to shift from the manual laborer to the knowledge worker--with all it entails in the way of education, training, and satisfaction.

## PURPOSE AND PROBLEM

It is the purpose of these remarks to present the results of sociological research. Since there exists no dominant body of sociological theory, the research was decidedly eclectic. The given problem was to examine the sociological environment through 1985. From the sociological standpoint, environmental studies center on human beings. And, since the word "sociology" can be correctly used to refer "meditation on and appraisal of the leading social characteristics, trends and problems of our times" (Mitchell), PEOPLE, CHARACTERISTICS, TRENDS and PROBLEMS formed the outline for this study. Two kinds of material are presented: facts gained through research, and opinions on possibilities. The intent has not been to forecast events but rather the effects of probable events and their applicability to the Navy. These are not presented as panacea nor cure-all. Neither are they intended to placate or comfort. It is hoped not all will be readily accepted; for, in the words of Drucker, "If a forecast meets with

widespread acceptance, it is quite likely it does not forecast the future, but in effect, reports on the recent past." It would also suggest a surrender to the inevitable temptation of simply predicting what the audience is thought to desire.

Linear projections have been avoided as much as possible since they characterize so much of what is said and written about the future and cause us, in the words of Alvin Toffler, "to worry about precisely the wrong things." It is also for this reason that the "knowledge worker" has been emphasized. His decisions are vital to ensuring control of the future. The point is made because research for this study revealed quite strikingly that much of what is being recommended for the future was, in fact, available for determining the present. The literature clearly suggests no dearth of men of vision or ideas. The Navy, for example, has conducted numerous studies of the personnel aspects of navy life. Table I shows

TABLE I

MAJOR SECRETARY OF THE NAVY POLICY BOARDS SINCE 1957

| | | | |
|---|---|---|---|
| FLATLEY . . . . . | 1957 | PRIDE . . . . . | 1963 |
| DORNIN. . . . . | 1958 | COMBS . . . . . | 1964 |
| KEITH . . . . . | 1959 | ALFORD. . . . . | 1964 |
| COOK. . . . . | 1959 | SHEA. . . . . | 1966 |

eight major Secretary of the Navy policy boards which have met since 1957. There have been numerous others dealing with more defined subjects. All made recommendations to improve navy life. The Alford Study made 130 recommendations. One hundred fifteen were approved by the Secretary of the Navy in 1966. They are strikingly similar to "Z-grams" now being issued by the Chief of Naval Operations.* Apparently the Retention Study Group Program established by NAVOP Z-2, as well as other advisory groups which have followed, have confirmed the validity of what previous policy boards have recommended.

Secretary of the Navy John H. Chafee and ADM Elmo R. Zumwalt, Jr., have received considerable attention and accolade for their interest in "human resources" but their unique asset would seem to be more their capacity for action; for converting counsel into policy. As a means of accomplishing their objectives, neither was the first to recognize the importance of people. Secretary of the Navy Paul Nitze

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*For this observation, the author is indebted to CDR L. A. Gilliland, USN, of the College of Naval Command and Staff, U.S. Naval War College.

told a congressional committee in 1964 that developing the means of retaining high-quality and highly trained officers and men was the most serious problem facing him. To help rectify the situation, he commissioned the Alford Study. The cycle is now complete: ideas proposed; decisions made; action taken. It can now continue.

## POPULATION AS A DETERMINANT OF POWER

Since many of the changes generating the future have already happened, they can be identified through systematic search. Changes in population are the most fundamental and least reversible in the normal course of events. The population of any nation is sometimes regarded as a measure of its power. The one is a prerequisite for the other, but it is not a guarantor. It is one of the measures of power potential, but there is no established ratio. While none of the world's major powers have a population of less than 50 million, there are nations of 50 million and more that are not world powers, and nations of less that are powers in special ways. Considering the world's powers and a list of the most populous quickly reveals the disparity. See Table II.

TABLE II

RANK ORDER LISTING OF THE WORLD'S MOST POPULOUS NATIONS

| COUNTRY | RANK | COUNTRY | RANK |
|---|---|---|---|
| China (Mainland) . . | 1 | Bangladesh. . . . | 9 |
| India. . . . . | 2 | Nigeria . . . . . | 10 |
| U.S.S.R. . . . . | 3 | Germany, F.R. of. | 11 |
| United States. . . . | 4 | United Kingdom. . | 12 |
| Indonesia. . . . . | 5 | Italy . . . . . | 13 |
| Pakistan . . . . . | 6 | France. . . . . | 14 |
| Japan. . . . . | 7 | Mexico. . . . . | 15 |
| Brazil . . . . . | 8 | Philippines . . . | 16 |

Source: The American Almanac, Comparative International Statistics, (New York: Grosset & Dunlap, 1972), p. 794-796. Bangladesh inserted.

THE POPULATION EXPLOSION MYTH

Daniel Callahan, Director of the Institute of Society, Ethics and the Life Sciences and staff associate at the Population Council has written: "There exists little public or professional agreement on the issues (of population), other than on the perhaps non-revelatory proposition that the population . . . cannot continue to grow indefinitely at its present rate. Otherwise the issues are open to argument; and argument there is." However, it appears to the study group that, alarmists not withstanding, the world is not about to breed itself into catastrophe. But what it has already done is breed itself to the point where is it growing increasingly concerned about crowding, pollution, resources, and deterioration

of the environment. These concerns should be expected to continue and perhaps be the source for violence. Such goals as "zero population growth" will not be sufficiently satisfactory in the short run to satisfy the poor, the hungry, the crowded, or the polluted.

Frank Notestein, President Emeritus of the Population Council and a member of the Planned Parenthood-World Population Board of Directors notes that if evidence is considered and not just inchoate fears, there is not the slightest indication that per capita income in the United States would be consequently different if there were 100 million more people or 100 million fewer. Regarding pollution he notes that the current excitement about the size of population as a cause of pollution is almost completely without merit, save in the sense there can be no pollution without polluters. He believes pollution is related almost exclusively to mismanagement and a high standard of living and is only negligibly related to numbers. As an example, he points to Australia which is sparsely populated (roughly equivalent to the state of Ohio) but has 80 percent of its people concentrated in large cities and has much the same smog and other pollution as does the United States. He believes pollution control of all kinds

will require social and economic changes of considerable magnitude, but that manipulation of the numbers of people in the society to solve this problem is probably not a realistically open option. For one thing, it is not quick enough and the increasing tempo of demanded changes suggests that speed will be essential. In political terms, relating pollution to population may have done harm to a serious attack on both pollution and on population growth. It weakens interest in the present by concentrating on a distant goal.

Regarding food and other resources, Notestein states there are no substantial limits in sight either in raw materials or in energy that alterations in the price structures, product substitution, anticipated gains in technology and pollution control cannot be expected to solve. He is not alone. Demographer Colin Clark, director (from 1953 to 1969) of the Institute for Reserach in Agricultural Economics at Oxford University in England, also disputes the scare headlines and believes there may, in fact, be too few people. Lack of publicity explains why the agricultural economists and demographers have had such small effect on the general public compared to some of the sociologists and biologists of the lecture circuit. And the effect of many well-intentioned

businessmen who pour millionsof dollars into campaigns to convince America that it is overpopulated cannot be discounted. Planned Parenthood's budget for 1971, for example, was $20 million, 20 times what it was a decade ago.

Dr. Clark asserts that the facts available show that the U.S. population could continue to increase at its present rate until the year 2000 and that there would still be a food surplus. He claims that it is more than a surplus--that it has become a matter of acute political difficulty to keep food production down and that the sending of people to prison for tampering with the soil bank and paying farmers to keep their land out of production emphasize the reality.

The most sweeping attack on population stability comes from the pen of a distinguished French demographer, Alfred Sauvy. Sauvy's main explanation is that when population stops growing, society loses a sort of creative pressure that stimulates and adds healthy ferment to all its aspects. There are others, and for a more detailed discussion, the reader is referred to The American Population Debate, an edited collection by Daniel Callahan (Doubleday).

Thus, Ben Wattenberg writes:

> But what is wrong, and dangerous, and foolhardy is to make population a crisis. Doing so

> will simply allow too many politicians to take their eyes off the ball. When Explosionists say, as they do, that crime, riots, and urban problems are caused by "the population explosion," it is just too easy for politicians to agree and say sure, let's stop having so many babies, instead of saying let's get to work on the real urban problems of this nation.

## WORLD POPULATION

The present world population and projections to the year 2000 are discussed in the Phase I study of the The Long-Range Future of the Navy. Included are chapters on "Demography and Food Resources," "The Environment of the Future," and "International Politics and World Stability." Therefore, in Phase II, the population of the United States has been examined in greater detail.

## THE POPULATION OF THE UNITED STATES

Population would seem to be one of the easier numbers to forecast through 1985. Virtually 100 percent of the 1985 work force has been born and there was a census completed in 1970. Yet the latest projections show a range of nearly 20 million persons between the high and low estimates. For 1985, official forecasts of the Bureau of the Census of the U.S. Department of Commerce vary between 240 and 258 million. (Series B and E projections of Current Population Reports, Series P-25, No. 470). Significant in view of widespread

concern in recent years over the so-called "population bomb" and efforts to accommodate the vast increases is that estimate figures are decreasing. Projections of but a few years ago are now known to have depicted too high a rate of population growth.

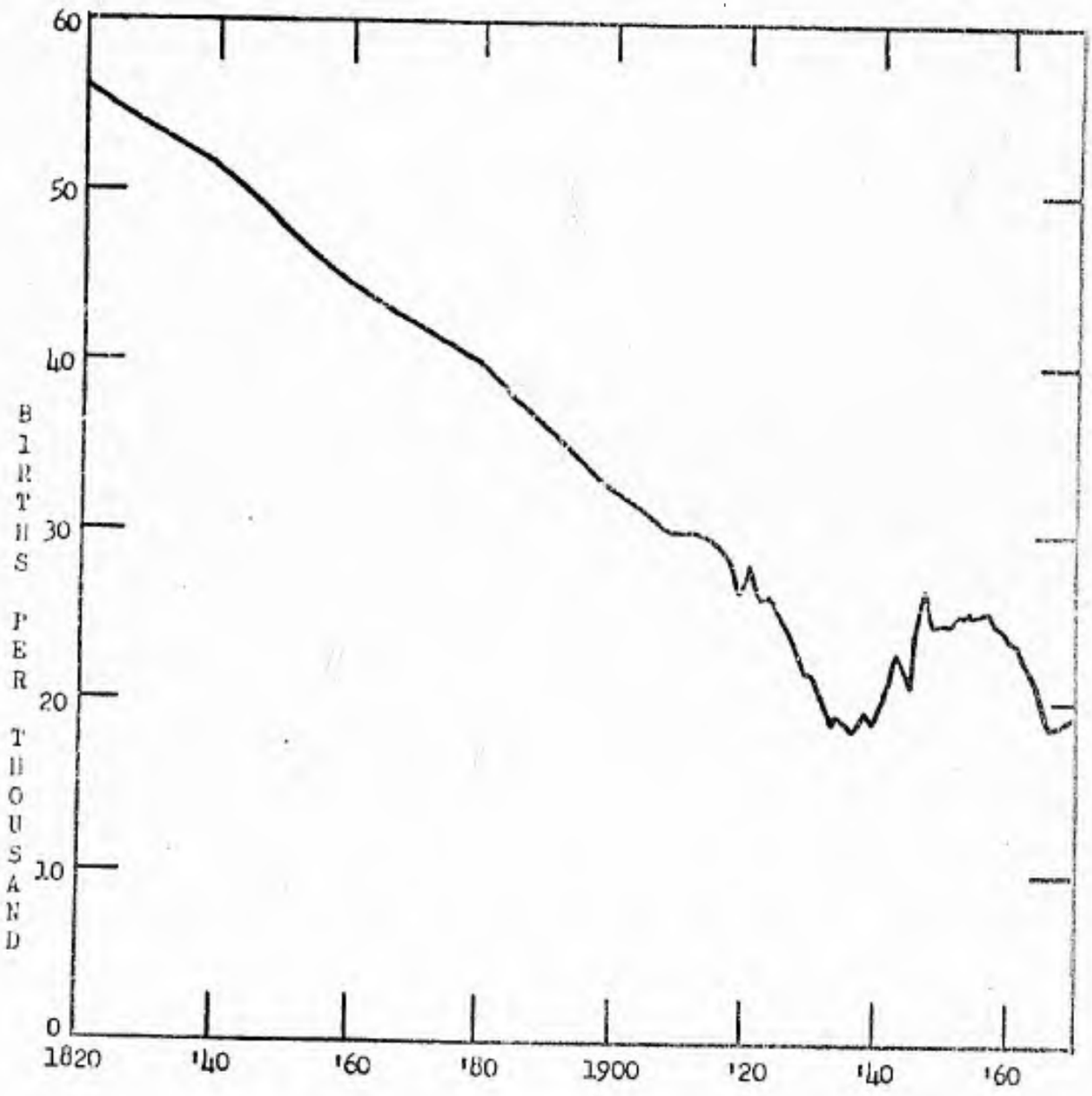
## THE BIRTH RATE

Confusion in estimating is due at least in part to the rapid decline in the birth rate between 1947 and 1968. It fell from 25.3 to 17.5 per thousand population. The previous low in history was 18.4, recorded in 1933 during the Depression. There was a gradual recovery to 24.1 in 1946, a spurt to an all-time high of 26.6 in 1947 following the Second World War, and a sustained high level cresting at 25.3 in 1957. There was then a sharp and steady decline until 1968 when the birth rate was 17.5, the lowest on record. Nineteen hundred and sixty-nine and 1970 showed an increase to 17.7 and 18.2 respectively.

On the basis of trends stretching back 150 years, it can be argued that the high birth rates of 1947-1957 were a temporary interruption of the historic downtrend in the U.S. birth rate. See Figure 1. This postwar period was marked by an apparent resumption in family formation and births deferred

FIGURE 1

THE BIRTH RATE IN HISTORICAL PERSPECTIVE




Source: National Center for Health Statistics, U. S. Public Health Service and The American Almanac.

because of depression and war, and, to a lesser extent, a borrowing from the future through marriage and motherhood at a relatively early age. But since the start of the 19th century, the trend in this country has been toward fewer children. One reason suggested has been the shift from the farm to the city, where youngsters were less needed to help with the work and more expensive to raise. There have also been rising levels of income and education, and many couples have apparently chosen to raise their standard of living by limiting the size of their families. Other considerations are the more limited living space in modern homes and apartments and the heavy cost of higher education. The effect of "the pill" remains to be seen. Thus, while analysis of the 150 year trend would suggest the 1969-1970 birth rate increase to be the start of an incline that will peak and decrease again as shown in Figure 1, there is no certainty. It is the traditionally cyclic trend which should be considered.

Offsetting the overall downward trend in the birth rate is the changing age structure and the number of women in the principal childbearing ages (assumed to be 15-44). See Table III and Figure 4. This virtually insures a rise in the number of births in upcoming years, even if the average number of children per woman declines.

Most significant for future projections has been the recent introduction of a new timing pattern for fertility which has a younger average age of mother than previously assumed and which has considerable effect on projections. The Bureau of the Census reports that the increases in the projection figures are not the result of a change in attitude toward the general level of future fertility; rather the new timing pattern is an important methodological change which results from a reexamination of the relation between the level of fertility and timing pattern of fertility. In effect, women appear to have been having children at a younger age than was previously assumed. This affects projections for the period of this study. Whether this trend will continue, or whether women will also stop having children at a younger age, remains to be seen.

## MARRIAGES AND FAMILY FORMATION

The number of marriages rose to 9.3 per thousand in 1965 following a decrease from 12.1 in 1940 to 8.5 in 1960. For 1970 the preliminary figure is 10.7. Again, at least a partial explanation can be found in the changing age structure. The "postwar babies" reached marriageable age. (The median age at first marriage for women has been slightly over 20.

It has been about 23 for males since 1950.) Thus, there will be more families through 1985 despite whatever marriages may have been delayed due to the Vietnam draft or by longer periods of education or restrained by the effects of income on the sudden flood of young people entering the labor market. But an increasing divorce rate will modify that somewhat.

## THE CHANGING AGE STRUCTURE

The most significant change in the population of the United States is that occurring in the composition of the various age groups. (See Figures 2, 3, and 4.) Although the total population will continue to increase during the period of this forecast (See Table IV), the increases are much greater within some age groupings than others. During the sixties, the 18 to 24 year old group grew explosively. It was the dominant group with a net increase of 12.1 million between 1960 and 1970. Between 1975 and 1985 the same group will show a net decrease of 2.5 million. The 25 to 34 and the 35 to 44 year old groups will each increase by about nine million, making these the dominant groups. While there is nothing revelatory in the observation that the "war babies" are getting older, it is significant that there is no large group immediately following them to continue the "accent on youth." The situation with regard to the male recruiting

base is presented in Table III and Figure 3. While there will be numerically more males in 1975 between the ages of 15 and 24 than there were in 1970, it should be noted that the absolute number declines between 1975 and 1985. Thus, by 1985, there will not even be one million more 15-24 year old males than there were in 1970. When the net change occurring in the sixties and the decade between 1975 and 1985 is examined, the reality is even more striking. Figure 3 shows that while the 15-24 year old male recruiting base experienced a 6.2 million increase in the sixties, that same group will show a net 1.1 million decrease between 1975 and 1985. Figure 4 shows that the situation is approximately the same for females as for males. There are, therefore, no purely demographic reasons to expect more women than men to be available.

Analysis of where the major increases in population are occurring suggests there would be demographic reasons for adopting policies aimed at more adult individuals. Being so much more numerous, young people 25 to 34 years of age, and those 35 to 44, will have to compete harder for good jobs and promotions. While this could bring more of them into the armed services on a voluntary basis, it assumes the civilian and other private sectors will not adjust and create increased

opportunities for these larger groups. There is nothing to prove that it won't. In either event, growing national wealth and rising levels of education will increase expectations, and institutions best able to satisfy needs will enjoy the recruiting and retaining advantages.

## IMMIGRATION

An additional factor influencing the population of the United States will be immigration. The volume of net civilian immigration into the United States has been established by law since the early 1900's. Most of the laws have tended to keep the volume at a low level. However, the United States still receives regularly more immigrants than any other nation in the world. In 1970 the number admitted was 373,326.

From World War II to 1956, the average number of immigrants admitted was 306,000. Owing in part to the influx of large numbers of refugees from Cuba, the number increased to 342,000 between 1957 and 1965. The Immigration and Naturalization Act of October 1965 permitted a moderate increase, and actual figures since that year suggest the volume of immigration will average approximately 400,000 per year. This means that during the forecast period about six million will be added to the more than 45 million immigrants (and their descendants)

admitted since 1820. More than half will come from other North American countries and Europe. Their influence on American attitudes should be anticipated.

## PERSONAL AND SOCIAL CHARACTERISTICS

In late 1966, the Combat Developments Command established a committee to examine the "people" responsibility of the U.S. Army. It was also at about this time that an article entitled "The People Factor" appeared in the U.S. Naval Institute Proceedings quoting then Secretary of the Navy Paul Nitze as telling a congressional committee that retention in the Navy of high quality and highly trained officers and men was the most serious problem facing him. The Army committee investigated the degree to which the human element was considered in the combat development cycle and concluded that most of the command's stress had been placed on the material aspects and that increased emphasis on "personnel implications" was needed.

The question of how effectively to place man at the core of the development cycle was continued in 1968. Exploratory conferences were held with other Army and DOD agencies, and the results indicated that nearly all Army programs seemed to assume that although the individual soldier would have to

TABLE III

COMPARATIVE ANALYSIS OF THE POPULATION OF THE UNITED STATES BY AGE AND SEX (in millions)

MALE

| Age | 1960 | 1970 | 1975 | 1985 |
|---|---|---|---|---|
| Total | 89.0 | 100.2 | 106.3 | 123.4 |
| Under 15 | 28.3 | 29.5 | 29.5 | 37.4 |
| 15-24 | 12.2 | 18.4 | 20.4 | 19.3 |
| 25-34 | 11.4 | 12.5 | 15.6 | 20.5 |
| 35-44 | 11.9 | 11.4 | 11.2 | 15.4 |
| 45-64 | 17.6 | 20.0 | 20.7 | 20.5 |
| 65 & Over | 7.5 | 8.4 | 9.0 | 10.3 |

FEMALE

| Age | 1960 | 1970 | 1975 | 1985 |
|---|---|---|---|---|
| Total | 100.0 | 104.6 | 111.1 | 128.7 |
| Under 15 | 27.4 | 28.3 | 28.3 | 35.8 |
| 15-24 | 12.2 | 18.0 | 19.9 | 18.7 |
| 25-34 | 11.6 | 12.7 | 15.6 | 20.3 |
| 35-44 | 12.3 | 11.8 | 11.6 | 15.8 |
| 45-64 | 18.4 | 21.8 | 22.9 | 23.0 |
| 65 & Over | 9.1 | 11.7 | 12.8 | 15.2 |

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 470. Figures are consistent with 1 April 1970 census data and assume completed fertility Series C.

TABLE IV

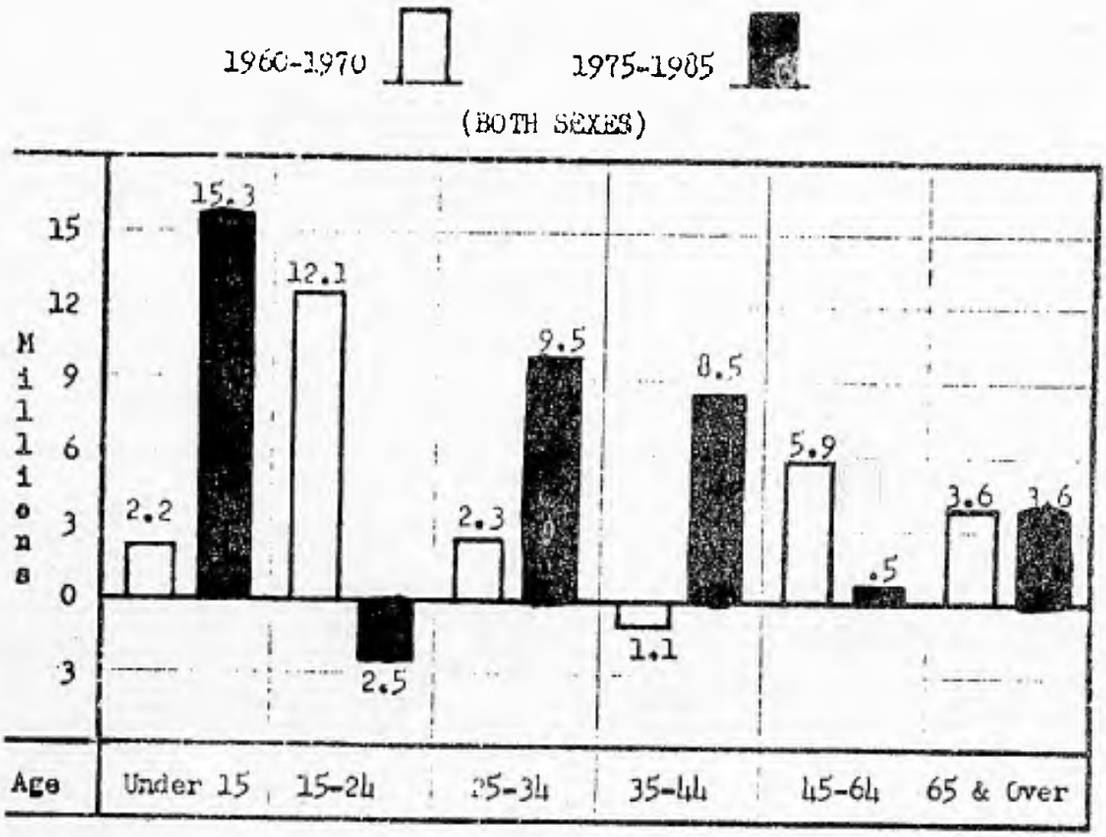
COMPARATIVE ANALYSIS OF THE POPULATION OF THE UNITED STATES BY AGE - BOTH SEXES (in millions)

| Age | 1960 | 1970 | 1975 | 1985 |
|---|---|---|---|---|
| Total | 180.0 | 204.8 | 217.4 | 252.1 |
| Under 15 | 55.8 | 58.0 | 57.8 | 73.1 |
| 15-24 | 24.4 | 36.5 | 40.4 | 37.9 |
| 25-34 | 23.0 | 25.3 | 31.2 | 40.7 |
| 35-44 | 24.2 | 23.1 | 22.8 | 31.3 |
| 45-64 | 36.1 | 42.0 | 43.4 | 43.5 |
| 65 & Over | 16.6 | 20.2 | 21.9 | 25.5 |

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 470. Figures are consistent with 1 April 1970 census data and assume completed fertility Series C.

FIGURE 2

UNITED STATES NET POPULATION CHANGE BY AGE GROUP[a]



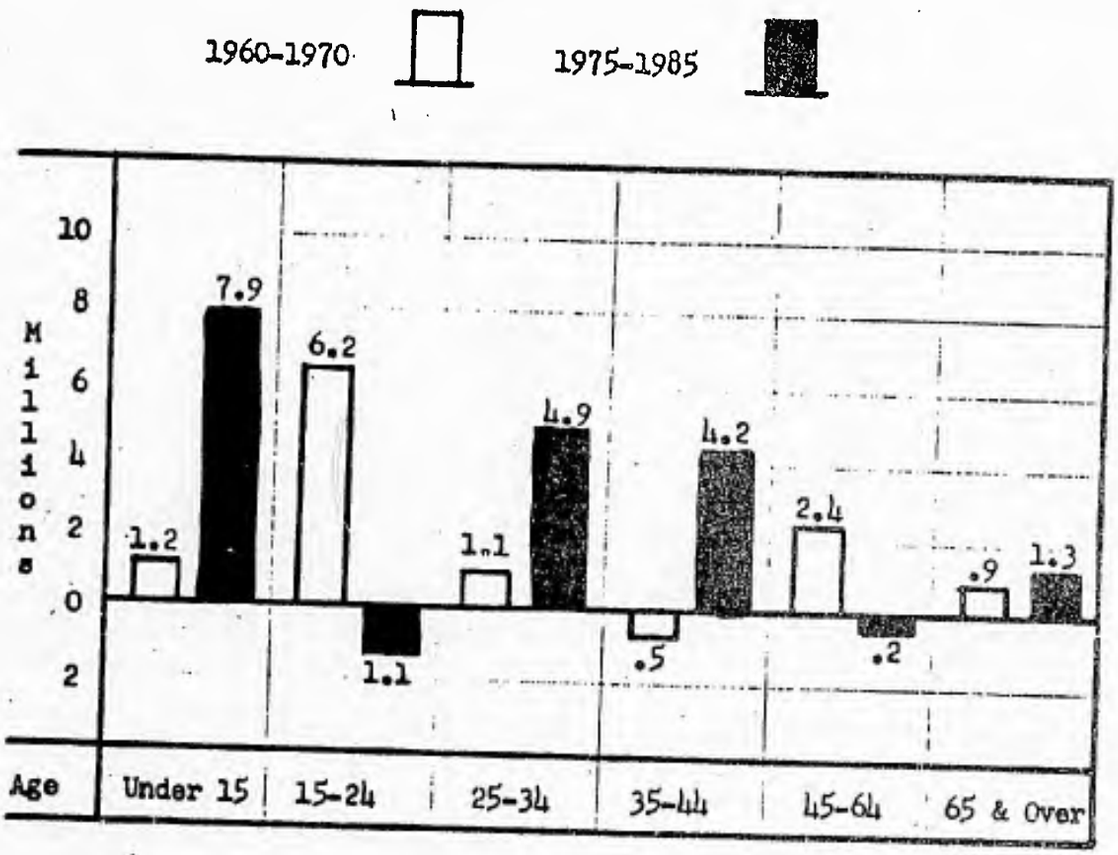

[a] Projections are consistent with 1 April 1970 census data and assume completed fertility Series C (2.78 children per woman upon completion of childbearing).

Source: Compiled from U.S. Department of Commerce, Bureau of the Census; Current Population Reports, Series P-25, Nos. 310, 448 and 470.

FIGURE 3

UNITED STATES NET POPULATION CHANGE BY AGE GROUP[a]

(MALES ONLY)



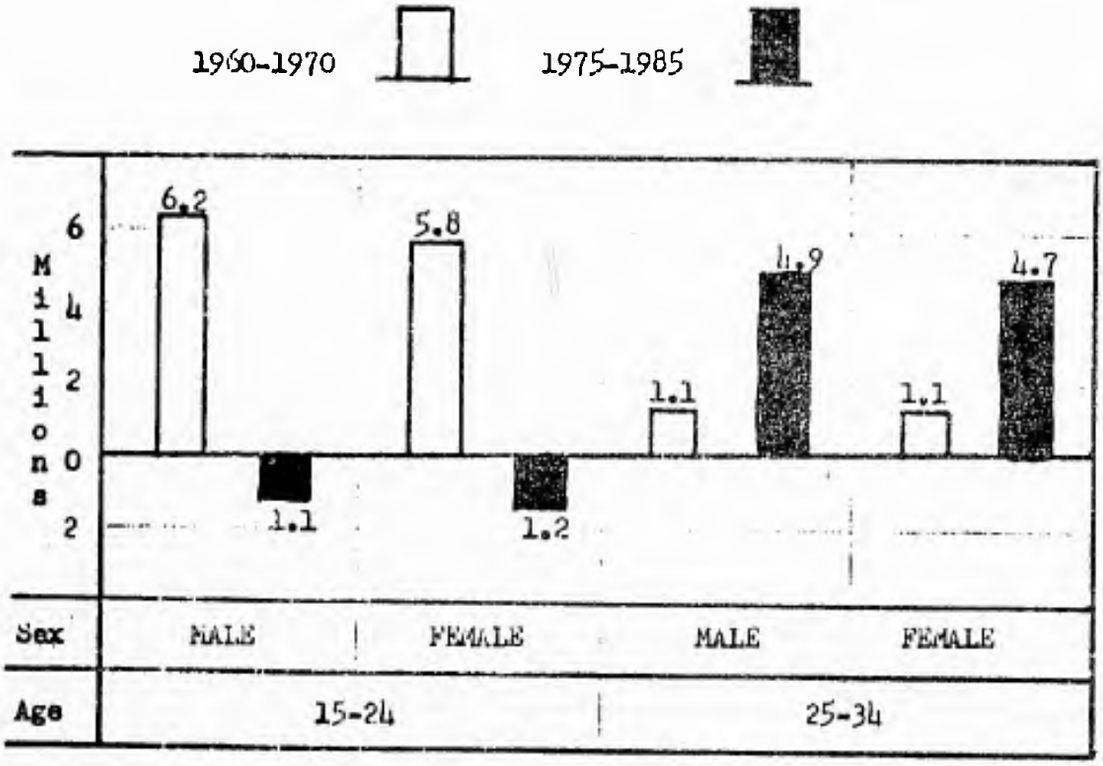

[a] Projections are consistent with 1 April 1970 census data and assume completed fertility Series C (2.75 children per woman upon completion of childbearing).

Source: Compiled from U.S. Department of Commerce, Bureau of the Census; Current Population reports, Series P-25, nos. 310, 440 and 470.

FIGURE 4

UNITED STATES NET POPULATION CHANGE BY SEX

AND SELECTED AGE GROUPS[a]




[a]Projections are consistent with 1 April 1970 census data and assume completed fertility Series C (2.78 children per woman upon completion of childbearing).

Source: Compiled from U.S. Department of Commerce, Bureau of the Census; Current Population Reports, Series P-25, Nos. 310, 448 and 470.

operate changing equipment, function within varying organizational frameworks, and exist in various parts of the world, he himself was a static element. It was recognized that this assumption was contrary to the growing body of social and behavioral science data, so in May 1969 a behavioral and social science research team was directed to determine methods of incorporating behavioral influences into the combat developments process. It produced a profile of the population of the United States and a forecast of the national environment entitled Man and the 1990 U.S. Environment. This was followed by an additional study directed specifically to assess the American Soldier in the 70's. Its scope included tasks which aggregated and summarized the available literature on the probable personal and social characteristics of youth in the seventies. On the basis of this research, the 19 characteristics presented in Table V were identified. They are believed to represent an accurate overview of the current youth group though every man may still be an exception to the norm. Some of the characteristics may appear contradictory and others may not seem to typify members of the counterculture popularized by the press and television. Some parents may even find it difficult to see their offspring represented

in the listing. This phenomenon is discussed further on and should not be cause for skepticism regarding the validity of the listed characteristics. They are consistent with numerous findings and represent the results of six years of study by army researchers.

TABLE V

PERSONAL AND SOCIAL CHARACTERISTICS OF YOUTH IN THE SEVENTIES

| | |
|---|---|
| Peer Group Oriented | Mass Educated |
| Liberal | Mobile |
| Individualistic | Challenging |
| Industrious | Socially Aware |
| Value Sustaining | Functionally Oriented |
| Idealistic | Accustomed to Affluence |
| Suspicious | Urban Oriented |
| Self-Expressive | Self-Centered |
| Unpretentious | Disenchanted |
| Attuned to Democratic Process | |

Source: U.S. Department of the Army, Combat Developments Command, Personnel Offensive (Phase I), p. 36.

## VALUE TRENDS

Just what trends in values these personal and social characteristics will spawn is debatable. In corporate management seminars, the theories of Brandeis University Professor Abraham H. Maslow are popular. Maslow has constructed a five level hierarchy of needs which he used to explain behavior. He maintains there are at least five sets of goals which may be called basic needs. These are briefly: physiological,

safety, love, esteem, and self-actualization. And for each he presents the dominant concern pattern and the typical value and psychological orientation. Like Carl Jung, he emphasizes the growth process as taking different forms at different periods of development. He contends that society in the United States is reaching the upper levels. Maslow's theories are popular for many reasons. They have been around long enough to have been thoroughly discussed and understood; they respond to the American proclivity to categorize; and they present trends which instill confidence by suggesting ways of accommodating the future and remaining in control of it. Perhaps most important, they also appeal to the relatively small but vocal and prolific members of society who see themselves at the top of the ladder, at the level of self-actualization. In the manner that Maslow himself presented them, his theories seem to be valid. But they have given some the impression that the "self-actualizer" is much more common than he is and is, therefore, the man to be accommodated in the future. Some further interpret this as implying that accommodating the self-actualizer can only be done at the expense of, and presumably to the belittlement of, those lower on the ladder. And because the "self-actualizer" is

the individualistic, spontaneous, creative, and sometimes mystic man so popular in current literature yet so little understood, some prefer to accept the theory only so far as it relates to the "belonger" or the "esteemer" levels to which more can more easily relate. Maslow explains this by noting that no nation and very few individuals operate at the level of the self-actualizer. Nor will they during the time of this forecast, but the evidence does suggest the long-range trend is in that direction.

## THE GENERATION GAP

Considering the current emphasis on youth and concern for the characteristics and values of this large group, it should be noted that few scholars relate age more than incidentally to values. A group exhibits characteristics and adopts values primarily because of the degree to which its needs have been satisfied. While youth may move faster to the higher levels of need as a result of having primary needs satisfied, others are likewise able to move up or down the ladder. Thus, the self-actualizer is not representative of an age group but is an individual to be found at every age, in every walk of life, in every occupation, with every type of interest. The evidence further suggests that more will

be found at the higher levels in the future. Even those "belongers" and "esteemers" who distain the higher level will be forced more toward it since their own needs will not be fulfilled by clinging to values for which they will no longer be admired or respected for having. They will have to adjust even to remain at their own level. There is nothing wrong in this, and it is one of the unfortunate aspects of the current phenomena that traditional value holders view the acceptance of new ideas as threats to and criticisms of their way of life. In fact, it is their way of life that has made it possible for others to move on to other things.

There is evidence to suggest the "generation gap" has been incorrectly portrayed in the media. Indeed it may never have existed at all. The gap is more between values than generations. The distinction is important to avoid overreaction to misleading symptoms. In assessing the alleged generation gap in the U.S. Naval Officer Corps, one author concluded neither of the age groups studies was homogeneous. He found no package of attitudes which could be characterized as standard. On almost every question some members of each group were found at each end of the attitude spectrum, (Barber) and a review of articles appearing in the U.S. Naval Institute

Proceedings over the past two years confirms a multiplicity of viewpoints not directly attributable to age.

But the alleged "generation gap" has introduced problems. There is much animosity between the over and under 30 generations. University of Wisconsin Professor of Psychiatry Seymour L. Halleck has written:

> Somewhere in the heart of every person over 30 lies a substantial store of deep resentment, even hatred for the young. . . . Every adult patient I have treated in the past five years, including some who pride themselves on feeling quite liberal, at one time or another expressed rage toward the antics of the young.

And youth have taken advantage of their sheer numbers. But as the middle groups increase in size there will not be a corresponding increase in the number of under 30's to continue the emphasis on youth. Already there are indications that the over 30's are awakening to the realization that there is still far too much of their lives to be lived to lie down quietly and surrender to the young.

## THE FUTURIST MOVEMENT

Herman Kahn, Director of the Hudson Institute* and

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*The Hudson Institute is a private, nonprofit research organization studying public policy issues, especially those related to long-range perspectives, to U.S. national security and world order, and to social and economic development.

pioneer in the futurist movement, is one who predicts a "counter-reformation" or return to the more traditional values of middle America. While acknowledging the near-certainty of qualitative changes, he stresses the continuity of values and rejects the rightest theories of the counterculture and humanist left. He notes that what have come to be known as "the kids" are a very small minority and are concentrated among the "prestige" universities of the northeast. While this group may consist of as many as one-third to one-half of the enrollment at these schools, Kahn notes that in total they do not number more than 500,000 and are, in fact, probably much smaller in number. Mr. Kahn also suggests this may have some impact on the continuation of the "prestige" of the universities of the northeast. Accordingly, it may be more than coincidence that Michigan State University has been first in the Nation for the 7th consecutive year in number of national merit scholars enrolled; MSU--632, 2nd place Harvard--549 for the 1971-1972 school year.

Mr. Kahn further explains much of the current phenomena by asserting that the biggest credibility gap in the United States in recent years has not been between the government and the governed but between the literate press and television, and middle America. He observes that people who have

been writing about many of the issues of the day have had sociologies all their own and that often they have been quite extreme. And from an analysis of selected publications he concluded that the more literate an author was; the more prestigious the institution with which he was associated; and, often, the higher his credentials; the less likely he was to have an understanding of the major issues of concern to most Americans. The only exception he found was an underground paper in New York's Greenwich Village.

Lt. Col. Frederic J. Brown has observed a similar phenomenon with regard to the Army and society. Writing in the March 1972 issue of Military Review he notes:

> The myth of the necessity of "meaningful" social involvement throughout the Army may be more real to some of the educated leadership of the Army who are influenced daily by the values of the elite establishment--represented by The New York Times and the Washington Post--than it is to the Army as an organization composed of average people, with traditional motivations, who stem from middle America.

Many predictions of futurists like Herman Kahn, Anthony Weiner, and Daniel Bell have proven accurate in the past. And in making their predictions they have developed a methodology useful for future research. But even they have learned the hard way the speed and reality of change. Some of their

early predictions proved too timid. In these instances the predictions were fulfilled, but as many as 10 to 20 years before they were expected.

## THE SOCIAL INDICATORS MOVEMENT

Daniel Yankelovich, president of the largest attitude research firm in the United States, began to study campus values in the mid-1960's. By actually measuring values and attitudes he attempts to identify ongoing changes in people. He also rejects the "generation gap" theory. His research reveals that divisions among young people are even greater than those between young people and their parents. But he also notes that young people are often the "forerunners" of attitude changes and that they do indicate the emergence of changing values. In "The New Naturalism," published in the Saturday Review, he emphasizes his belief and notes that since he began studying the revolution in campus values he has been reminded of Alfred North Whitehead's dictum that "great ideas often enter reality in strange guises and with disgusting alliances." His own conclusion is that the formula holds true for the present student movement and that it does harbor a great idea which, in essence, is that we must initiate a new stage in man's relatedness to nature and the

natural. However, he also finds it necessary to note there are almost 20 meanings of the concept of "natural" as the student movement defines it.

Yankelovich believes that changing values are actually being added on to the more traditional values and will supplement vice supplant them. And he also maintains that the population is so large and diverse that a part of it may change drastically while another remains the same. This is especially important in considering the future of the U.S. Navy for it suggests there will continue to be numerous options for which at least limited support could be mustered. To be able to draw conclusions, Yankelovich asserts, it is necessary to have detailed knowledge with respect to the size and rate of growth of changes and what groups are affected by the trends. "To understand what is happening to people, it is necessary to look directly at people." There are also indications that it is necessary to look totally at the group involved. This was demonstrated recently by the presentation of a "LCDR Retention Study Group" in Newport, R.I. The group consisted of 13 officers who met for one week and presented recommendations to the Chief of Naval Operations. Discussion following the presentation to a group of interested

lieutenant commanders revealed quite strikingly that the study group did not represent the opinions of a large portion of the audience. While it is not surprising that a group of 13 failed in one week to come to conclusions representative of the feelings of thousands, the only fault is that it purported to do so. By so doing it gave the impression that crucial decisions were to be made on the basis of minority opinions expressed by skilled briefing officers with access to high officials. In fact, such groups (properly motivated) are only attempting to do on a small scale what the social indicators movement attempts on a larger scale--collect opinions and evaluate trends. The important difference is the distinction between the opinions of individuals and the trends within an entire group. To properly determine the latter, the methodology of the social indicators movement has merit. And it enables the planner not only to identify new trends but to monitor the success or failure of programs based on previously identified trends. And by acting as a check on the trends, it permits an assessment of the validity of the futurist estimates. Both movements are useful tools of the planner.

## CURRENT SOCIAL TRENDS

In an attempt to understand the degree of transformation taking place in the United States today, Daniel Yankelovich, Inc. has identified the following trends as some of the indicators of change.

. . . Trend toward female careerism

. . . Trend toward life simplification

. . . Return to nature

. . . The changing role relations between the sexes

. . . Antimaterialism

. . . The new romanticism

. . . The trend away from self-improvement

. . . Anti-hypocrisy

. . . Living for today rather than the future

. . . Growing tolerance for disorder

. . . Social and cultural self-expression

. . . Physical self-enhancement

. . . Changing sexual mores

. . . Acceptance of drugs

And as indicators of special significance to institutions, the firm also monitors the following trends:

. . . Trend away from business as the central reality

. . . Shift from single to multipurpose institutions

. . . Trend toward consumer rights versus consumer wants

. . . Demands for responsible business

. . . Questioning of need for new technology

. . . Concern with the agony of growth

. . . The questioning of authority

By following such trends directly, the Yankelovich firm follows the recommendation of Donald J. Bogue, professor of sociology and director of the Community and Family Study Center of the University of Chicago. He is also former president of the Population Association of America and writes:

> In times of social revolution, it often is fruitless to forecast the future on the basis of past experience. Instead, it is better to abandon time series analysis and study the phenomenon of change itself, seeking to understand it and to learn in which direction and how rapidly it is moving.

## ENVIRONMENTAL INFLUENCES ON ATTITUDES AND BEHAVIOR

As a final indicator of the trends in values pertinent to the U.S. Armed Forces, the data contained in Tables VI through IX have been extracted from a December 1971 Stanford Research Institute study of the "Effectiveness of the

Modern Volunteer Army Advertising Program."* They are presented for their possible value as trend indicators worthy of continuing consideration.

## BEYOND BUREAUCRACY

It was Max Weber, a German sociologist, who first conceptualized the idea of bureaucracy in the early days of the Industrial Revolution. It was intended as an alternative to the personal subjugation, nepotism, cruelty, emotional vicissitudes, and subjective judgments which passed for managerial practices at the time. Roles were to be institutionalized and reinforced by legal tradition rather than by the "cult of personality." Rationality and predictability were to eliminate chaos and unanticipated consequences. Technical competence was emphasized in favor of arbitrary whim. But bureaucracy also had its faults and Provost Warren G. Bennis of the University of New York at Buffalo is one who predicts its demise. Bennis, a social psychologist and professor of industrial management, predicts flatly that we will all

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*The authors wish to acknowledge the existence of numerous other publications of the Stanford Research Institute which, for proprietary reasons, could not be used herein. Specifically recommended for subscription and future use by the U.S. Navy are publications of the S.R.I. "Long Range Planning Service."

TABLE VI

PERCEIVED ADVANTAGES OF BEING IN THE ARMED SERVICES

"Like most other organizations, the Armed Forces have good and bad points. When you think of the typical young man, what are the good things about being in the armed forces for him" PROBE: What are the advantages of being in the armed forces?

| | Total Young Men | College | Non-College | White | Black | Armed Forces Prospects |
|---|---|---|---|---|---|---|
| Gain maturity/self reliance: helps them mature; gives them a sense of direction | 29% | 30% | 29% | 31% | 16% | 42% |
| Job training/learn a trade: opportunity to learn a vocation | 28 | 27 | 28 | 28 | 25 | 35 |
| Travel: the experience acquired from travel would be good for them | 21 | 20 | 21 | 20 | 26 | 24 |
| Learn discipline: learn to take and obey orders | 16 | 21 | 14 | 17 | 6 | 16 |
| Educational opportunities: helps one to obtain a good education at no cost | 16 | 13 | 17 | 16 | 13 | 16 |
| Benefits: G.I. Bill; health benefits, pension and retirement benefits | 12 | 16 | 11 | 12 | 13 | 15 |
| A career: offers young men a career in a specialized field | 10 | 10 | 10 | 10 | 7 | 11 |
| Chance to serve country; helps one feel he is doing something worthwhile for country | 9 | 9 | 9 | 9 | 6 | 15 |
| Start a new life: an opportunity to get away from problems at home/school | 8 | 8 | 7 | 8 | 7 | 7 |
| Broaden one's outlook | 7 | 11 | 6 | 8 | 5 | 11 |

Source: Opinion Research Corporation, Attitudes and Motivations of Young Men Toward Enlisting in the U.S. Army as quoted by Stanford Research Institute, Effectiveness of the Modern Volunteer Army Advertising Program, Menlo Park, Calif., 1971, p. 61.

TABLE VII

PERCEIVED DISADVANTAGES OF BEING IN THE ARMED SERVICES

"Now, on the other side, what are the things that are not so good about being in the armed forces? PROBE: What are the disadvantages of being in the armed forces?"

| | Total Young Men | College | Non-College | White | Black | Armed Forces Prospects |
|---|---|---|---|---|---|---|
| Might get killed/wounded: might be crippled for life | 29% | 28% | 30% | 29% | 31% | 24% |
| Time lost: years lost out of your life; disrupts their lives | 28 | 37 | 24 | 29 | 16 | 23 |
| Discipline: have to take too many orders; too many rules and regulations | 23 | 29 | 20 | 23 | 21 | 16 |
| Away from family/friends; would miss family, girl friend, etc. | 22 | 14 | 25 | 23 | 18 | 26 |
| Loss of identity: not allowed to think for yourself; lose your individuality | 22 | 40 | 15 | 24 | 12 | 11 |
| Opposed to Vietnam War: fighting in a war many are opposed to | 19 | 16 | 20 | 19 | 24 | 12 |
| Forced to serve against your will | 15 | 23 | 13 | 16 | 14 | 13 |
| Forced to kill; against my principles to kill human beings | 12 | 21 | 8 | 12 | 10 | 5 |
| Low pay: pay is next to slave labor; only make 11¢ per hour | 12 | 10 | 13 | 13 | 8 | 11 |
| Might be sent to Vietnam | 10 | 6 | 12 | 9 | 16 | 12 |
| Physical hardships: the physical training is rough and tough on an individual | 8 | 7 | 8 | 8 | 6 | 7 |

Source: Opinion Research Corporation, Attitudes and Motivations of Young Men Toward Enlisting in the U.S. Army as quoted by Stanford Research Institute, Effectiveness of the Modern Volunteer Army Advertising Program, Menlo Park, Calif. 1971, p. 62.

TABLE VIII

PREFERENCE FOR BRANCH OF SERVICE

| Prefer | Rome Arnold National Sample of Young Men (Wave I) | Opinion Research Corp. Total Sample of Young Men | Opinion Research Corp. Sample of Armed Forces Prospects |
|---|---|---|---|
| Army | 9.2% | 14% | 20% |
| Air Force | 30.9 | 34 | 31 |
| Navy | 27.0 | 37 | 32 |
| Marines | 6.8 | 8 | 15 |
| Coast Guard | 11.2 | | |
| National Guard | 9.1 | | |
| None of them | 4.0 | | |
| Don't know | 1.8 | | |
| Wait for draft | | | |

Source: Rome Arnold and Company, Army Advertising Effectiveness Study, Wave I, National Probability Sample, as quoted by Stanford Research Institute, Effectiveness of the Modern Volunteer Army Advertising Program, Menlo Park, Calif. 1971, p. 72.

TABLE IX

MAJOR REASONS STATED FOR SERVICE PREFERENCE

| | Rome Arnold Wave I Survey[1] | Opinion Research Corp. Survey[2] | Gilbert Youth Research Survey[3] | Audits & Surveys at AFEES[4] |
|---|---|---|---|---|
| **Prefer Army because:** | | | | |
| "It is the best" | 20.2% | 4% | | |
| Opportunities for education/training | 24.6 | 26 | 11.0% | 54% |
| Has the shortest term of service | 22.5 | 20 | | 35 |
| **Prefer Air Force because** | | | | |
| "It is the best" | 13.4 | | | 19 |
| Opportunities for education/training | 49.5 | 47 | 42.6 | 70 |
| Better living, housing, food | 7.7 | 15 | | |
| Safer, less chance of combat | 10.0 | 17 | | |
| **Prefer Navy because:** | | | | |
| "It is the best" | 7.3 | | | 16 |
| Opportunities for education/training | 24.4 | 25 | 22.4 | 16 |
| Better living, housing, food | 21.1 | 32 | | |
| Safer, less chance of combat | 17.2 | 34 | | |
| Opportunities for travel | 27.2 | 24 | 54.8 | 14 |
| **Prefer Marines because** | | | | |
| "It is the best" | 24.2 | 13 | | 24 |
| "Tough outfit, makes a man of you" | 48.5 | 39 | 58.2 | 21 |

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Sources: 1. Rome Arnold and Company, Army Advertising Effectiveness Study, Wave 1, National Probability Sample, tables 29 through 40.

2. Opinion Research Corporation, op. cit., page 21.

3. Gilbert youth Attitude Survey, op. cit., table 9.

4. Audits and Surveys, Army Recruiting Study, Summary of Findings, Quantitative Phase, Chart 84, showing data here for white males only, May 1969.

All as quoted by Stanford Research Institute, Effectiveness of the Modern Volunteer Army Advertising Program, Menlo Park, Calif. 1971, p. 73.

"participate in the end of bureaucracy" and should begin to look "beyond bureaucracy."

Bureaucracy, according to Bennis,

> . . . thrives in a highly competitive undifferentiated and stable environment, such as the climate of its youth, the Industrial Revolution. A pyramidal structure of authority, with power concentrated in the hands of a few . . . was, and is, an eminently suitable social arrangement for routinized tasks. However, the environment has changed in just those ways which make the mechanism most problematical. Stability has vanished.

Bennis contends that the first assault on bureaucracy arose from its incapacity to manage the tension between individual and management goals. However, this conflict is somewhat mediated by the growth of an ethic of productivity which includes personal growth. The second and more major shock to bureaucracy has been caused by the scientific and technological revolution. It is the requirement of adaptability to the environment which leads to the predicted demise of bureaucracy and to the collapse of management as we now know it.

## BEYOND PROFESSIONALISM

The rise of professional loyalty is another manifestation of the demise of bureaucracy. The Stanford Research Institute reports: "The number of professions with high prestige is growing. Within business more layers of high

esteem jobs are recognized, with consequent diminution of the 'captain of industry' concept and a rise in the status of the professional as distinguished from the line doer." But there are also changes evident in the concept of professionalism. Doctors and lawyers continue to be regarded as professionals but within their ranks they are each identified more as specialists in particular fields within the profession. And the traditionally pinnacle positions are being less and less filled by men of the profession. Hospital directors, for example, are increasingly administrators chosen for their ability to manage rather than their ability to practice medicine. The position is no longer a reward for outstanding achievement in the profession.

This has its direct correlation in the Armed Forces. Many of its specialties have achieved the status of professions. As each is recognized and accorded prestige, there is a consequent diminution of the "general line officer" concept. This emergence of individual specialties as professions transcending the concept of the generalist as the professional is not without historical precedent. The transforming of the aristocratic feudal military establishment into a professional armed force was the first step. Although signs

were visable in the 18th century, sociologist Morris Janowitz has observed that the military did not emerge as a profession until after 1800. It was the emergence of professionalism that caused the emergence of a career service and the decline of the "gentlemen" in warfare. The aristrocratic officer was displaced as artillery and more elaborate logistic planning required that the military be a trained and full-time occupation. Upper class educations failed to provide the background the occupation now required. Middle class technicians took over the specialized artillery and engineering services, while the infantry and cavalry remained the domain of the aristrocracy. And as the simple division of labor gave way to a complex pattern of specialization, the number of ranks increased and the staff officer emerged as a specialist. The military became a profession separated by training from other professionals. All of these transformations implied that positions of authority would have to be allocated on the basis of achievement and demonstrated competence.

Now it is happening again, and it can rightly be said that the military has outgrown its profession and become a conglomerate of many professions--precisely akin to the large corporations that are also uniquely the result of an

advanced industrial society. The new skill structure of the Military Establishment is one in which specialization penetrates into even its combat--and hence traditionally military--roles. The concentration of persons engaged in purely military occupations is a minority and even they involve technical specialization. The transferability of skill to civilian occupations is extremely widespread and can be seen from an occupational analysis of enlisted personnel since the Civil War. Table X demonstrates the trend.

TABLE X

OCCUPATIONAL SPECIALIZATION IN ARMY ENLISTED PERSONNEL

CIVIL WAR TO 1954

| Occupational group | Civil War | Spanish-American War | World War I | World War II | Korean Conflict | 1954 |
|---|---|---|---|---|---|---|
| Civilian type | | | | | | |
| Technical, scientific | 0.2 | 0.5 | 3.7 | 10.1 | 10.7 | 14.5 |
| Administrative, clerical | 0.7 | 3.1 | 8.0 | 14.6 | 19.2 | 17.5 |
| Skilled mechanics, maintenance, etc. | 0.6 | 1.1 | 21.5 | 15.8 | 16.9 | 20.3 |
| Service Workers | 2.4 | 6.5 | 12.5 | 9.7 | 11.5 | 10.4 |
| Operative, laborers | 2.9 | 2.2 | 20.2 | 13.6 | 8.6 | 8.4 |
| Military type | 93.2 | 86.6 | 34.1 | 36.2 | 33.1 | 28.8 |

Source: Report on Conditions of Military Service for the President's Commission on Veteran's Pensions, Question IV (Nature of Military Duties), December 28, 1955.

But vestiges of ascriptive status and authority in the form of seniority tend to reward traditionally military achievement. Consequently the authority structure does not articulate with the skill structure, and a deep source of organizational strain results. And like all professions, the military has been influenced by the "law of effect" which is that behaviors that seem to lead to rewards tend to be repeated, whereas those that do not seem to lead to rewards tend not to be repeated.(Haire) There are indications that this, too, is changing. And the change is manifested in the rise and encouragement of professionalism in the military. Simply stated, personnel are becoming more interested in their own standards of excellence and less interested in the standards of organizations and institutions. It should be recognized, therefore, that man in the future is likely not to be a very good organization man. As Alvin Toffler notes in Future Shock:

> Thus we find the emergence of a new kind of organization man--a man who, despite his many affiliations, remains basically uncommitted to any organization. He is willing to employ his skills and creative energies to solve problems with equipment provided by the organization, and within temporary groups established by it. But he does so only so long as the problems interest him. He is committed to his own career, his own self-fulfillment.

Adam Yarmolinsky is one who considers these trends desirable: "As the military character of the military establishment becomes less distinctive, absolutist perceptions may be replaced by more realistic ones. The military may come to be regarded as any other part of government."

Finally, the thoughts of Col. Richard F. Rosser, USAF, as presented in the Seaford House Papers: 1970 (Great Britain) and reproduced in the Military Review are germane. In discussing "Civil-Military Relations in the 1980's," Colonel Rosser relates a declining world role for the U.S. military and notes that the U.S. Armed Forces are about to enter an era of drastically altered missions. He notes several trends which make the services less attractive. One is the increasing contrast between life in the military and life as a civilian. Another involves the societal values discussed earlier. He goes so far as to suggest that the traditional distinction between commissioned officer and enlisted may no longer be relevant and, indeed, is a needless irritant. While noting that discipline and rank must certainly be maintained, he suggests there could be equal opportunity for all to advance through the ranks. He notes that police forces have operated on this principle for decades and bolsters his argument with the observation that a college education is no longer perceived

by many as sufficient distinction between officer and enlisted. Moreover, he notes that Air Force enlisted men do not believe that a pilot is automatically qualified to be an officer.

Rosser also discusses the nature of the commitment to the organization. He notes that individuals no longer feel the same degree of loyalty as did their fathers to a given company, industrial concern, or educational institution. And he extends the thesis to the professional who is also showing signs of being less loyal to his profession. Medical doctors, for example, are charged with having forgotten their Hippocratic oath; professors, their students.

These trends account in part for two of the more significant concerns of modern individuals. The first is a trend toward more leisure or discretionary time. This is essentially a desire to escape. It is not a rejection of the work ethic and accounts, in part, for why individuals could be characterized--as they were earlier--as being both individualistic and mobile and, at the same time, industrious and value sustaining. It also promises to become one of the major issues of the near future.

## WORK V. LEISURE

Working hours averaged 70 per week for the average man in farming and industry in 1850. Paid vacations were nonexistent.

By 1900 the average hour figure had been reduced to 60. Non-farm workers received pay for two holidays, and a few had paid vacations. By the 1960's, weekly hours averaged only slightly more than 40, and the average worker was paid for six holidays, about one and one-half week's vacation, and a week's sick leave. There was additional time off for coffee breaks, rest periods, cleanup and travel time. The reduction has been from approximately 3,630 hours per year in 1850 to 3,100 in 1900 to 1,960 in 1965--about a 50 percent decrease in 115 years.

Supreme optimists have predicted a computerized Utopia by as early as 1990. One has claimed: "Man now has it within his power to turn the earth into a new Athens in which all men will be aristocratic, free to live their lives to the fullest while their modern slaves, the ubiquitous machines, toil to support them." While not many expect this to occur, economist Robert Lewis has written: "By 1990, the same high living standards that we enjoy today could be maintained for a population 74 million greater, but with about one-third fewer man-hours of work than in 1966." He further notes that if approximately one-third of all expected productivity gains were devoted to increasing leisure, the average worker would have

as much as 175-200 hours more free time in 1975 than in 1966 and 350-375 hours extra in 1990. If all future productivity gains were taken in the form of leisure, and the remaining amount of work shared among the expanding total labor force, a 46 percent increase in total employment could be supported by 1990. When the man-hours available for extra leisure are divided among this increased labor force, they amount to 1,048 hours and could reduce the average work year to 912 hours as compared to the current standard of 1,960 hours per worker.

If the workweek were to remain at 40 hours, the reduction in hours could theoretically divide the year into 23 weeks' work and 29 weeks' leisure. A 49-week workyear would permit the reduction of working hours to 18.6 per week--a possible schedule of three days a week, six hours a day. Or the present average working life of 42 years could be cut in half, making possible longer education and earlier retirement, or any combination of shorter workweeks, workyears, or work-life.

But these projections are just as hypothetical as the one which assumes all productivity gains would be applied to increased output of goods and services. They are presented

not as a precise or expected forecast of an uncertain future, but as an approximate measure or indication of the magnitude of the anticipated changes for which the Navy must prepare. Just how increased productivity and available leisure time is to be applied--fewer hours worked per day, fewer days per week, or fewer weeks per year--will be the result of countless collective bargaining agreements and management decisions over the decades ahead. But even if the traditional compromise between work and leisure is the end result, the implications for the Navy remain great. In a study prepared for the National Commission on Technology, Automation, and Economic Progress, Professors Kreps and Spengler concluded that about one-third of the gains from increased productivity beyond what was needed to maintain living standards had historically been used to decrease work and increase leisure. The other two-thirds were used to raise living standards. While decreasing work, increasing leisure, and raising living standards may sound like dreams of Utopia or goals of debatable value to those conditioned to "get the job done," they are demonstrable realities, a part of the future that is already happening. And such striking changes are in keeping with historical precedent. Less than 40 years ago there was

powerful attitude opposition to legislation restricting child labor; less than 25 years ago the six-day week was common; less than 20 years ago the steel industry had a bitter strike on the issue of whether unions could bargain for pensions.

## COLLECTIVIZATION

A second concern of modern individuals relates to the trend toward collectivization. This is not an attempt to escape. It is an attempt to exert individual control over the environment and must be expected to continue. And because individuals have learned they are more effective when operating through institutions, the formation of professional societies and unionization within the armed forces is a likely occurrence.

A historical analysis of American unionism reveals little comity of interest between organized labor and the military. W.L. Britton, following a study of union movements in the public and military sectors of the United States--and, to a lesser extent, Sweden where military unions exist--abstracted his conclusions and stated: "logic indicates that intrusion of the labor movement into the armed forces is unlikely, owing to a lack of motivating interests on the part of both labor

and the military." However, use of the word "intrusion" suggests a possible bias perhaps not entirely in keeping with the stated "relatively dispassionate view" he considered "possible" and "necessary." In addition, Britton himself notes that his conclusion that "unions [in the traditional sense, it must be emphasized] will probably not be desired by any segment of the military large enough to warrant serious consideration. . .is no more secure than the notion that logic will prevail." It seems almost he sensed the possibility of unions arising in the military but could not bring himself to say so. Nonetheless, the American Armed Forces have, in fact to date had little need of unions as such, having been well served by private enterprise--including unions--which has forced legislative bodies to set wages nearly commensurate with those prevailing in the labor market in which the military competes for personnel.

In many ways the American military has for decades been significantly ahead of the labor movement. It has long offered job tenure and working contracts, promoted almost entirely from within, demanded responsible leadership, prohibited exploitation, provided dental and medical care, possessed an early retirement plan, nurtured an effective grievance procedure--

ranging from the formality of the Court of Military Appeals and Request Mast, through chaplains and recreation committees, to the basic tenets of leadership regarding the welfare of men in ranks--and been itself an organization through which a man could satisfy his psychological need to belong. The military has perceived no need of unions and they, in turn, would appear to have had little to offer or receive from the military. Therefore, it would seem entirely logical to project from the past and contend that unionization of the Armed Forces would be unlikely to occur. But therein is demonstrated the danger of mere projections of the past.

The effects of the past and present upon the future allow an almost entirely opposite scenario. The military, accustomed to being well provided for by its "union" in Washington--the Congress of the United States--and being well ahead of the public sector in benefits received, now observes a public sector offering many of the same enticements without the risk of combat and the reported rigors of military life. Thus, benefits are now taken largely for granted and possess little recruiting and retaining value. Facing fiscal restraints and realization that its manpower claims more than half its annual budget, the military finds

itself unable to increase its blandishments and, in some instances such as retirement, is being urged to reduce. Despite billings as "improvements" and "efficiencies," the reductions are perceived by most--rightly or wrongly--as economies designed to reduce dollar costs. Not surprisingly, reduced costs are interpreted as reduced benefits.

The conclusion to be drawn is that unionization within the Armed Forces is unlikely so long as the Congress continues to provide pay, incentives, and working conditions commensurate with those obtained in the civilian and other public sectors. But the decreasing value of military benefits and increasing disparities between standards of living in and out of the military will cause those who have already committed themselves--or wish to for other reasons--to look to something else to provide the treatment they have come to expect. That "something" could well be unions, although the officer corps, at least, would probably opt for the "professional society" similar to that adopted by college professors and teachers.

The organized labor movement has, to date, exhibited little overt interest in the military. Not only has there been little comity, there has been a conflict of interest. Increases in military benefits must ultimately be paid for

by taxpayers, many of whom are also union members. Taxpayer cupidity has a debilitating influence on the rise of unionism and could well affect the degree of public support available to organizers of any union within the Armed Forces. Even so, there is money to be made in unionizing the military. An armed force of two million, paying dues for only 50 cents per man per month, could generate a $12 million annual business--for better or for worse.

The labor movement entered the public sector following relative stagnation in the private. Today, local, State, and Federal government is the growth stock of unionism. This shift was due at least in part to the movement seeing an opportunity to retain the vigor of organized labor and a chance to breach the wall of white collar resistance. Perceived again, these motives could easily influence union attitudes toward the military.

Finally, it would seem that the burgeoning unionization of the public sector will ultimately impinge directly upon the military officer in the form of his dealings with the more than one million civilian employees of the Department of Defense. Should this constant contact result in his viewing his civilian counterpart--or, more significantly,

his subordinates--as "better off" than he, union-enhancing friction could result.

The mere existence of unions in the American Armed Forces is apparently within the law. This was demonstrated by the formation of at least a so-called "union" at Fort Sill Okla. in 1967. It was never challenged on the basis of illegality. Strikes, on the other hand, are prohibited by law in the public sector--and are often prohibited in union contracts themselves--yet they happen. Within the military they would no doubt quickly bring charges of absence without leave, desertion, sedition, and even treason. Also, it would be difficult to avoid regulations regarding conspiracy and conduct prejudicial to good order and discipline. And, in view of the subjective emotion evidenced by many at the thought or mention of the word "union," mere membership by officers would likely bring charges of "conduct unbecoming." However, the entire labor movement has been a history of battles fought and battles won, and much of what was once illegal is now protected by the law itself. Even in the public sector, unionism has been nourished by legislative action, court decisions, and executive order. Most crucial to this discussion is the probable effect of efforts to thwart unionizing

on the basis of the law. In that regard, the so-called "gag orders" of Presidents Theodore Roosevelt and Taft have relevance. An immediate effect was to drive Federal employees into affiliation with the outside labor movement and the fullest use of its resources. It would seem, therefore, that the military would be ill advised to attempt to thwart collectivization effort within the Armed Forces. Rather it should seek to continue to provide for its members so as to reduce the apparent need and attractiveness of collectivised effort. The real danger is that collective power, once achieved, tends to transcend the initial purpose and becomes a driving vice corrective force.

## CONCLUSION

An analysis of the future population of the United States suggests the changing structure of the age groups to be the most significant demographic factor with which the future Navy will have to contend. There will be only a few more 15-24 year olds in 1985 than there were in 1970, and many of those will be staying in school longer.

The literature on the personal and social characteristics of youth and society suggests not so much a radical change in basic characteristics as a change in definition and priority ordering. And from an analysis of literature on

trends in values, it is apparent that traditional values are being more taken for granted than rejected and that new and additional values will supplant them. In effect, this means that modern man no longer feels the need to fight for those values his forefathers considered important, not because he rejects them, but because he has them. He now wants to build upon them. But that is not to say there is no problem. The problem for the Navy is to decide on the kind of man it wants and needs and to construct its programs accordingly. The biggest obstacle will be the American penchant for categorization; attempts to construct programs as though man were a homogeneous entity. Perhaps the most significant observation resulting from this research is the multiplicity of attitudes, values, and opinions held by individuals. Yet in each there are overtones of a search for self-fulfillment. This is difficult to describe without conjuring visions of selfishness, but there is a differnece and it is an extremely important one. The individualistic, self-centered, self-actualizer is no more selfish than the more traditional patriot, authoritarian, or "organization man." The former may even be more interested in the so-called "common good" than the latter who sometimes tendssimply to define the common good in terms

that suit his individual needs, thereby hoping to subscribe some high moral purpose to them. It is this hypocrisy at which much of today's disenchantment is aimed. And it is toward the elimination of this hypocrisy which many of today's Navy programs are and must continue to be aimed. Adults may not like the questions asked by youth or seniors like the questions asked by subordinates, but in answering they fulfill their role as educators--and sometimes learn as much or more than their audience. To the extent they can and do answer, progress is served; to the extent they can't or don't, progress is hindered and misunderstanding the result.

Promise seems to lie in the possibilities embodied in the concepts of "beyond bureaucracy" and "beyond professionalism." Assuming the van in this new arena would seem to have the greater chance than forced behavior to provide for innovative growth, worker satisfaction, and mission accomplishment. And it seems infinitely better than encouraging the trends toward fewer working hours and collectivized efforts at want satisfaction. It is submitted that three things are necessary: identification and adherence to values, changes in organizational philosophy, and use of the leadership techniques of the behavioral sciences.

Part Four--

# THE CORPORATE ENVIRONMENT

CDR W. F. Meyer

## CHANGING VALUES, SOCIAL RESPONSIBILITIES, AND THE CORPORATION

More and more, government leaders, business leaders, scholars, and the press are demanding that the bellwether of the free enterprise system and American Industry--the giant, shareholder-owned U.S. corporations--assume a larger role in finding solutions to our present critical domestic problems. Moreover, these demands are occurring within the larger context of fundamental changes in the criteria of business success. Traditional standards of accountability to shareholders are being enlarged to include responsibility to the entire range of individuals and institutions--employees, customers, and the general public--holding a stake in the future of business enterprise. Although these changes may be subtle and the extent and timing of the impact as yet unclear, specific demands and pressures already face many business institutions. An example of the sort of pressure that can be brought to bear on industry is found in the case of General Motors. After experiencing a "notably bloodied image" in its encounter with Ralph Nader in the 1966 Senate Hearings, GM successfully fought back with a variety of programs. To overcome the "bloodied image," GM's board chairman, James M. Roche, made a frank apology for his company's role in the Nader fiasco (1966 Senate Hearings). Later, Roche set the course for GM when he publicly declared "Corporations can respond effectively to increased demands by the public. GM then attacked four major problem areas as follows:

- Equal opportunity--elected first black to board of directors, increased proportion of minority group employment; increased white collar minority employees; conducted minority training programs; made capital available for low cost housing, minority owned banks, and minority small businesses.

- Environment--added prominent pollution control authority as vice president in charge of environmental activities; spent more than $188 million in 1971 to eliminate vehicular and industrial pollution.

- Overall Community Responsibility--set up a public policy committee within its board of directors, composed of five distinguished businessmen and educators, to investigate all phases of GM operations that affect the community as a whole.

- Public Affairs--instituted a campaign to educate institutional investors concerning these programs; set up active program whereby GM's side of the story is told to the public.

The cost of GM's reforms are just beginning to take shape according to a Fortune article entitled "GM--the Price of Being Responsible." The 1971 cost to GM was over $600 million. Says Fortune, ". . . had GM not spent that $615 million total on pollution and safety last year, its return on investment would have been 20.7 per cent instead of 17.6 per cent. Fortune adds:

> Clearly GM had little choice in making all-out efforts in the pollution and safety fields, new federal laws require them. But in many instances recently the company has gone beyond the legal requirements, often at some cost, has exceeded the standards. It has, moreover, done so willingly

> and with a belief that, although the cost might hurt, it was doing the right thing. Public pressures on GM to continue to be "responsible" are unlikely to recede.

The GM experience suggests, therefore, that industry will be forced to respond in a meaningful way to the legitimate demands of all of its stakeholders--its employees and the public as well as its shareholders--even though the cost is enormous.

The GM experience proves that if business does not respond voluntarily to the demand for greater social consciousness, society will force a response. Government pressures, organized boycotts, and shareholder pressure are but a few of the methods society uses to force change. In all of these it becomes apparent that management's ability to continue to do business--to deliver its products at a profit--is dependent upon responding to the demand for social change. It is also becoming increasingly apparent that business as usual--the production of goods at a profit--will be possible only by conforming to the demand for an increased societal role.

Changing values have also adversely affected production lines in America. The generally low esteem accorded to manual, semiskilled jobs has resulted in a shortage of reliable production workers in some plants. A Newsweek article entitled "Too Many Workers No Longer Give a Damn" says:

> . . . too many American workers--particularly young ones, who are supposed to be bubbling with energy and ambition--no longer give a damn. Whether they are overworked or overprivileged, pampered or oppressed, dehumanized by the demands of their jobs or just plain bored--whatever the reason--the evidence is strong that the traditional work

ethic of the U.S. is showing signs of senility. (Newsweek, 24 April 1972.)

These factors are having a devastating effect on efficiency, personnel turnover, and production costs. "In terms of internation competition," sums up U.S. Labor Department manpower expert Neal Herrick, "we've ridden technology as far as it will carry us. Now we need to apply some more human methods of management if we are to improve our productivity."

Mass production of the future will be structured so as to minimize the boredom and servility of the assembly line. Ford and Volvo are even now working to develop alternatives to traditional production methods.

The foregoing factors and the accepted societal role of helping the hard-core unemployed and unemployed teenagers find employment have resulted in large scale training and education programs by industry. The training of new hires usually has at least three identifiable components: attitude changing, remedial education, and job skill development (Harvard Business Review). A recent experiment by LTV Dallas is worthy of note. In its quest for suitable, reliable production workers, LTV resettled 750 Mexican-American families from the lower Rio Grande Valley to Dallas and trained them in the fundamentals outlined above. The program has been described as an outstanding industrial and social success.

In response to pressures from the Department of Labor, industry is beginning to link itself with the secondary schools

through cooperative programs to solve the problem of youth employment. Therefore, education is fast becoming an accepted societal role for industry. Educational/training requirements of industry of the future will become more complex, particularly if industry changes in the decades ahead to production alternatives necessary to satisfy the worker. The basic skill requirements, degree of training, and production costs will all increase appreciably if the production worker is to be qualified to perform multiple tasks in lieu of the simple tasks of today's high-speed production lines.

Examples of recent history show that such institutional investors as churches, universities, and nonprofit organizations have already been asked by their constituencies to investigate or object to certain corporate policies.

> Most of the challenges fall into the general categories of military contracting, foreign investments, particularly in South Africa, environmental concerns and public interest issues. (Boston Sunday Advertiser, 16 April 1972.)

Judging from these examples, the efforts of activists and labor organizations, the pressures of Federal, State and local governments and the stakeholders of the corporations, it would appear that the effects of changing values and the impact of social responsibilities will be felt well into the future. Recognizing these trends and responsibilities, industry is significantly increasing its interest and efforts into the study of "futures."

## DIVERSIFICATION AND THE INDUSTRIAL BASE

During the course of research it became apparent that there was some relationship between a sound long-range planning philosophy and diversification. One executive indicated that the strength of his company rested in the scientific-engineering core skills. For his company to survive in the face of uncertain defense budgets he had to diversify to keep these "core" skills employed, even if at a loss, to maintain their motivation and continued employment with the firm. For this reason many of the aerospace companies and even some of the Federal Contract Research Centers (FCRC) are turning to other product lines dealing with social and urban problems, utilizing the crossover skills of the aerospace workers.

For example, Bendix Corp., still thought of as a major defense contractor, has cut its total Government business down from 72 percent in 1962 to 29 percent in 1972. Most of the diversification was accomplished through the acquisition of 25 domestic companies. The attitude of Bendix's Chief Operating Officer, A.P. Fontaine, seems to reflect the attitude of many contacted during the study. He says:

> "We do not want to depend on the annual vagaries of the government and international tensions." (Fortune)

Boeing Aerospace appears to be headed in the same direction; however, its programs are still tied to various Government departments. In the 1960's Boeing Aerospace concentrated in two areas, the Minuteman ballistic missile and the Saturn space

booster. In 1972 the company had seven programs including a city rapid transit program, a community development program, an electronics product line, and others. The company expects to undertake 50-60 programs at any one time in the future. This trend corresponds with overall industry trends and reflects the range of opportunities available today.

While these trends are favorable in the overall domestic area, it would appear that in a peacetime environment interest in uncertain or cyclical defense programs will be reduced and may result in the erosion of the U.S. industrial base to produce defense products. In testimony before the Senate Armed Services Committee this year, Mr. Norman Grossman, V.P. Fairchild, said:

> We have suffered from the same malady which has infected Grumman and virtually the entire aerospace industry. Our Fairchild Republic Division business continues to decline, our labor base is shrinking and our rates are continuing to climb, "Grossman told the subcommittee," . . . . It is becoming more and more difficult to maintain our rates at an acceptable level. (Aviation Week, 10 April 1972.)

All of these factors when coupled with the possible reducing defense budget would point to the possibility that the production of military hardware may have to become concentrated in the hands of a few large corporations dealing almost exclusively in defense weaponry. Procedures governing military procurement in the future may develop in such a manner that single producers of expensive hardware would be treated as a form of regulated public utility.

## CORPORATE PLANNING

For purposes of background material, it seems appropriate to define corporate planning. A generally acceptable definition to most people might be as follows:

> The conscious determination of courses of action designed to reach given objectives. Planning is deciding in advance what is to be done, when it is to be done, who is going to do it, and how it is to be done. Long range planning attempts to do this for extended periods of time. But long range planning embodies much more than a time dimension; it is a continuous process of business life. (George A. Steiner, Management Review, Fall 1959.)

To be a little more specific and to relate planning to the total of corporate activities, the functions of a firm are said to be:

Finance

Sales

Production

Administration

and the functions of managing to be:

Planning

Organizing

Staffing

Directing

Controlling

Within this context, we may define planning as:

Establishing Objectives

Establishing Premises

Developing Alternatives

Selecting Strategies

Programing of the Finally Selected Strategy.

(Fisher 1962)

It was interesting to note during the course of research that there still exists a wide difference of opinion among companies on the relative values of corporate planning. Only the very large corporations appear to follow all of the steps of Fisher and Steiner as outlined above. According to Irwin (Management Review, November 1971) fewer than one company in 20 has succeeded in instituting a well-developed system of long-range strategic and operational planning.

During the period of the study, several firms were visited and the philosophical aspects of corporate planning were discussed. As a general rule most corporations devote very little attention to the long range (5-10 years) future. Corporate planning does not go beyond establishing goals, budgeting and those items necessary for current and/or short-term operations. When attention is directed to more than 3-5 years ahead, it is viewed with skepticism by most managers. The result is generally seldom better than a simple extrapolation of current trends and activities. The dilemma of manager in this regard is perhaps best expressed by Kahn and Weiner as follows:

> One problem of long-range speculation is that the subjective curve of probabilities often seems flat. That is, no particular course of events may seem much more likely than a large range of others. In order to avoid the dilemma of Buridan's ass, who

> starved midway between two bales of hay because he could not decide which one he preferred, we must then make arbitrary choices among almost equally interesting, important, or plausible possibilities. That is, if we are to explore any predictions at all, we must to some extent "make them up." Clearly, the most salient of the projections we can make is one that is "surprise free"; never-the-less it would be very surprising if in any thirty-three year period the real world did not produce many political and technological surprises. (The Year 2000)

Observations in the planning problems and attitudes of the companies surveyed are as follows:

- Pacific Ordnance and Electronic Corp.--primary product line is refurbishment and installation of electronic systems on Navy ships. Being a small company is a distinct advantage as it is able to respond quickly to "targets of opportunity." As time goes on and if some larger companies elect to underbid to keep their "core skills" employed, problems could develop which would affect the future business prospects of such small companies. With such narrow product lines, predicting the future is impossible, so they will continue to live "day-by-day" into the future.

- Grumman Aerospace Corp.--primary product line is manufacture of aircraft for the Navy. Since 90 percent of this company's business is with the Government, management appears to be skeptical of long-range forecasts. At present the planning staff is very small and seems to be limited to short and mid-range considerations. Since

markets for defense products have so many influences, it is easy to understand the reluctance of management to do critical planning on the basis of questionable long-range objectives of the Government. In cases such as this it is expected that contract difficulties and cost growths will continue for those companies with such narrow product lines and almost total dependence on Government business.

- General Dynamics Corp.--primarily a defense contractor with 73 percent of its business from Government contracts. Despite the fact that GD has several product lines, e.g., shipbuilding, aircraft, and avionics, it still has the same problems of long-range forecasting as mentioned in the case of Grumman. The corporate headquarters and divisional companies use the basic 5-year plan. Management basically feels that long-range planning is not productive, and the documents produced by the planning organization are often "filed without reading." Problems in financing, contracts, etcetera, will probably continue.

- McDonnell Douglas Corp.--primarily a defense contractor with 69 percent of its business from Government contracts. Unlike several other companies visited, it appears that McDonnell Douglas Corp. (MDC) has a well qualified staff for long-range planning and enjoys top management support. A unique feature of the MDC system is the issuance of an "Environmental Forecast" each year by the corporate

office. This document contains a 10-year forecast on political, economic, military force levels, projected air travel, social trends, etcetera, and contains the key assumptions upon which all corporate and divisional planning is to be based. While it is recognized that long-range planning is subject to rapid change, the MDC system affords management another input in the decisionmaking process.

- Ford Motor Co.--a multinational corporation. Particularly impressive was the dedicated effort devoted to long-range, 10-20 years, "futures" planning. The staff for this purpose is impressive and is deeply involved in corporate and societal value systems, i.e., those human values which will affect their production and markets. Each year prior to the issuance of planning assumptions to the many "profit centers," company officials are presented with an extensive futures brief, including probable and discernible trends. The primary purpose of the exercise is to factor "change" into the planning process, a trait that appears to be limited to just a few companies.

A significant problem in the staff organizations of most companies and the primary mission of the long-range planners has been described as, "how to get senior management to feel the items that will affect the future--how do you get up to his level of awareness?"

Future trends in business planning are expressed by Mockler as follows:

> During the 1970's attention will, I believe, focus on solving the problem of translating knowledge into practice. The solution will not necessarily be more planners and planning departments, or more expensive planning efforts, although these steps might help. Rather, it will come as management learns how to use existing planning personnel and facilities more effectively . . . Another trend in the 1970's will be the greater use of computer systems in planning. For example, one large oil company has designed a computerized strategic planning model which would enable management to test and evaluate many more alternatives than is possible with manual methods . . . not enough corporate managers understand how to put to it into practice and use sophisticated mathematical and computer tools . . . executives frequently are unwilling to change existing organization structures and to give planners the tools they need to get the job done. As a result, the planners often work in a vacuum acting as a sounding board for corporate managements futuristic thinking but isolated from the operating realities of the organization. Bolder and better directed experiments with planning directed techniques, organization, and administration are thus needed if this important function is to live up to expectations for it. We will, I believe, see many experiments in the 1970's. (Harvard Business Review.)

## INDUSTRIAL LEADERS MUST BECOME MANAGERS OF CHANGE

To avoid the whiplash of future shock we must, as President Nixon warns, "become managers of change." As one step in implementing that goal, the President on 12 April 1971 called for a White House Conference on the Industrial World Ahead, to look into business in 1990. (Secretary of Commerce Stans)

The White House Conference represents one of several gatherings of the industrial leadership to evaluate the problems of the future. Industry is significantly increasing its interest in long-range planning (10-20 years), world futures, and social change. Most notable among these efforts is a multiphase, multinational study effort by the Hudson Institute. Another major effort was the symposium sponsored by Fortune magazine in May 1971, the central theme of which was entitled, "Corporate Strategy in the Seventies." Participants in the symposium included Mr. Herman Kahn, Dr. Daniel Bell, Mr. Daniel Yankelovich, as well as several presidents, vice presidents, and chief economists of major corporations, and leading educators in the business field.

The significant factor in each of these efforts is the recognized urgent need to search well into the future and to identify the factors, trends, etcetera, that will impact on the industrial world of tomorrow.

Part Five--

# THE TECHNOLOGICAL ENVIRONMENT

Section One--

# TECHNOLOGY AND THE NAVY

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## MARGIN OF TECHNOLOGY

A significant factor affecting the U.S. Navy in the next 10 to 15 years will be a decrease in the margin of technological superiority which the United States has enjoyed since World War II. Advanced technology has become widespread as the result of greater affluence, education, and improved communications throughout the world. Other countries are catching up to the United States, at least on the frontiers of technology, and if the next big breakthrough has military applications, the country in which it occurs may enjoy a temporary advantage in a particular weapon system. However, in an age of intense scientific activity everywhere, new scientific knowledge is hard to keep secret. In all likelihood, a technological breakthrough made by one country will soon be duplicated by others. The very fact that a specific problem is known to have been solved may spur on other researchers to discover similar solutions.

Another consequence of the spread of technology is the increasing capability of relatively underdeveloped countries to do great harm. If they choose, such nations can organize their limited scientific resources to concentrate on advanced military technology. By so doing, they can produce a limited number of highly sophisticated weapons and delivery vehicles. China's development of nuclear weapons is an example of this process. Furthermore, underdeveloped countries can, by the same means improve on military hardware given them by more developed countries. All these possibilities make the

Navy's problem of dealing with military threats much more complicated in the future. Accurate and timely intelligence regarding foreign technology will assume vital importance. Streamlined procedures within the Navy which assure quick reactions to new threats will be essential. It will also be necessary to arm Navy ships with a variety of weapons so that a temporary advantage gained by a potential enemy in one weapon system will not neutralize the total fighting capacity of the fleet.

## RAPID TECHNOLOGICAL ADVANCE

Another factor affecting the U.S. Navy in the future will be the rapid rate of change in naval technology. During the next 13 years, major improvements in weapons and weapon systems are likely to occur. Among the systems being considered, lasers and tactical weather control can be classified as revolutionary.

Laser Developments. Lasers are relatively underdeveloped in terms of their vast potential applications, and large payoffs are likely for research and development (R&D) efforts in this field. A few laser applications that are of direct interest to the military are in communications, gyroscopes, and weapons. In communications, lasers offer an enormous increase in usable bandwidths. The highly collimated, directional, and line-of-sight characteristics of laser beams offer the possibility of greatly improved, secure ship-to-ship communications. In gyroscope technology, conventional gyroscopes take 15 to 30 minutes to reach working speed and temperature and require several minutes to reach steady state after a sudden turn.

Laser gyroscopes will start immediately and respond instantly to sudden turns. This capability has widespread implications for aircraft as well as missile guidance. The application of lasers in the weapons field probably offers the biggest challenge and payoff. The laser's ability to deliver intense heat or energy to a small area in a very short period of time makes its consideration as a weapon possible. Laser weapons conceived are naval antiaircraft and antimissile lasers, air-to-air lasers, and laser weapons to destroy ICBM warheads in space. It is likely that the ability of surface units to provide larger amounts of power will initially favor them in laser duels with aircraft or missiles. Under such circumstances it is possible that aircraft may go through a period of severely restricted use in offensive roles when faced with a surface-based laser threat.

Weather Modification. Weather predictions became a necessary and major part of military operations during World War II. An even more remarkable innovation was introduced when, for the first time, man changed the weather for his own military advantage. This occurred in the Battle of Britain when all Allies successfully used the fog-disposal system known as FIDO (Fog, Investigations, Disposal of). Fog disposal permitted the takeoff and landing of aircraft that would have otherwise been held on the ground or diverted to alternate fields or might possibly have crashed in the fog. Weather control on a wider scope would have vastly

greater military use. Considerable interest in weather modification and control is now evident, and in scientific interest ranks only slightly below space, computers, and nuclear energy. Significant progress has been made in weather modification during the past few years, and the goal of weather control appears to be a distinct possibility. The ability of the United States to master weather control during the period studied cannot be ascertained with finality, but there are no overriding technological reasons why the United States should not achieve leadership. However, maximum effort should be exerted toward this goal to preclude the possibility of unfriendly nations achieving this capability first.

Additional Potential Advances. As other examples of anticipated technology, liquid propellent gun systems may be developed that offer higher effectiveness per pound of installation weight than conventional gun systems. Gun projectiles with terminal guidance will give guns of the fleet a high degree of accuracy. Extensive use of microcircuitry and large-scale integrated circuitry will greatly improve avionics in terms of weight, volume, power, and performance. New structural and heat resistant materials will have wide application in the construction of aircraft and ships. Remotely piloted vehicles will be used more extensively for reconnaissance and surveillance. They may also be developed as weapon platforms for combat applications.

## POLITICAL COMMITMENT

Whether or not these weapons are developed for use by the U.S. Armed Forces depends on the U.S. political commitment to a strong defense. Without such a political commitment, backed by adequate funds for R&D, these developments are likely to occur first in foreign countries. The cutback in U.S. space research and cancellation of the SST program have resulted in the loss to the military of valuable sources of technological progress. In view of the constrained defense budget, the military services will have to take certain actions if timely technological progress is to be assured. The first action is to take more advantage of technology developed in countries friendly to the United States. It is estimated that allies of the United States spend about $3 billion per year on nonstrategic R&D, of which $1 billion probably duplicates U.S. work. Secondly, it is necessary to reorder U.S. priorities in R&D to emphasize those areas most critical to developing weapons and weapon systems that hold the greatest potential to meet future needs. For example, development of lightweight structural material must be stressed immediately if VTOL aircraft are to be operationally competitive with fixed wing aircraft in the 1980s.

## JOINT RESEARCH AND DEVELOPMENT

The military have in the past and are currently engaged in limited joint research and development projects. However, a great deal of independent research is still conducted. Independent

research has its merits in that more concepts, and aspects of those concepts, are explored than is possible otherwise. However, independent research is extremely expensive in terms of redundant efforts expended. In order to utilize the limited R&D resources more efficiently, all future military R&D may come under the control of a joint R&D organization. As a result, all services will have a greater degree of commonality in weapons and weapon systems. The Navy should not fight this trend but take an activist role in proposing and supporting joint projects. As in many other aspects of military activities, this trend points toward unification of the services which may be based on economic constraints and need for higher joint selectivity of projects and roles. However, given the sociological trend toward specialization and individual self-fulfillment as opposed to organizational loyalty, the military scientific community may not be averse to unification of R&D.

For similar reasons the trend toward joint R&D among the military services will be accompanied by increasing technological cooperation with the civilian sector. The establishment, in March 1972, of a Director of Military-Civilian Technology Transfer and Cooperative Development within the Department of the Navy is a significant step in that direction. One result of such co-operation is likely to be an increase in interagency projects such as the Joint Surface Effect Ship Project now being sponsored by the Navy and Maritime Administration. In addition, there is likely to be an increased use by the military of off-the-

shelf civilian hardware.

## OVERDESIGN AND OVERSPECIFICATION PROBLEM

The U.S. tendency to overdesign equipment and overspecify military requirements is likely to continue unless drastic changes in the philosophy of hardware acquisition take place. Overdesign occurs when fancier and more expensive components add very little to performance, comfort, or safety. In more extreme cases they add nothing at all or even turn out to be counterproductive because of added weight, increased manning requirements, or a tendency to malfunction under field conditions. A recent example of the latter occurred with introduction of the new DC-10 passenger aircraft to scheduled airline operation. An unusually large number of main cabin door malfunctions were attributed to the fact that mechanically sophisticated doors were being operated by mechanically unsophisticated stewardesses.

Overspecification of requirements occurs when equipment safety factors and performance characteristics far exceed the needs of anticipated operation. An example of this is the capability of the C-5A transport to land and take off from soft fields, and having not considered the fact that equipment to unload and service the aircraft are available at only a few major airports. This tendency to overdesign and overspecify will buy less than optimum military effectiveness per dollar expended. It may be asked whether buying off-the-shelf commercial aircraft or building ships to ABS (American Bureau of Shipping) standards will not suffice for many military applications.

## SHIP TECHNOLOGY

With regard to ship technology, it appears that the era of labor-intensive ships is over. Gone are the days when large numbers of unskilled men were hired to do the many menial shipboard tasks. Economic considerations have driven commercial ship operators toward automation. Today, 300,000-ton supertankers put to sea with less than 40 men. Technology now exists to automate most shipboard activities. Improvement in this technology will continue with emphasis on reliability, simplicity, and reduced cost. It appears that by 1980 standard equipment on new commercial ships will include anticollision devices and automatic systems for steering, navigation, diagnosis of power plant malfunctions, data logging, and damage control, to name a few. Computerized medical examination of crewmen is being seriously considered. The trend toward automation coincides with a shift in American emphasis from the manual laborer to the knowledge worker. Paradoxically, many operators of highly automated ships today have found crew boredom to be a significant problem.

In contrast to the automation of commercial ships, the still lavish use of manpower on board present-day Navy ships is anachronistic, certainly in terms of the future. The trend in warship design must be toward smaller, faster ships which are highly automated, austerely manned, and have large firepower. Functions which can be performed better by machines should be automated, leaving the crew free to think and perform higher

level operations of control and decisionmaking. The reduction in crew size will have an effect on ship size. Most maintenance should be performed in port, possibly by contract with commercial firms. Maintenance during deployment should be geared toward modular replacement of components, and other tasks can be performed by the crew to keep them occupied. The result will be fewer men at sea and indicates that all-officer crews could be a distinct possibility.

The principal arguments put forth against reducing manpower aboard ships are: (1) existing ships in the fleet are already manned at the minimum level for operational effectiveness; and (2) warships will always have to be heavily manned because they have to fight. The logic of the first argument has a certain amount of validity since the existing ships were designed to be labor-intensive. However, some of the service functions such as food preparation can certainly be streamlined to reduce personnel requirements without reducing combat effectiveness. The use of precooked and frozen foods has extended to the best hotels in the country, and the Navy should be able to adopt some of this technology. The second argument against reduced manning ignores the capability to design around the problem. Combat functions can be automated as well as, or better than, other shipboard operations. The short reaction time necessary to counter a missile attack, for example, makes manual operation a liability instead of an asset.

## USE OF COMPUTERS

In addition to improved automation, great advances will be made in the use of computers to augment human intellect. Techniques and equipment will be developed during the 1970's which vastly increase the capability of man to solve complex problems. Increased capability here means more rapid comprehension, better comprehension, the possibility of gaining a useful degree of comprehension in a situtation that previously was too complex, speedier solutions, better solutions, and the possibility of finding solutions that previously appeared insoluble. These are accomplished by using the computer as a direct adjunct to the human brain so that the two may interact on a real time basis. The symbiotic effect of such man-machine coupling will be much more powerful than most current applications which place the computer in a passive rather than interactive role.

Most operational military applications of computers to date have involved only data manipulation. In the future it will be necessary to think of computers in terms of their higher potential. Almost all future naval operations will be carried out in highly compressed time frames. Commanders at all levels will have to assimilate large amounts of input data, make decisions, and implement those decisions in a matter of hours or sometimes minutes, depending on the tactical situation. In such an environment it will be essential that the human intellect be assisted to the greatest extent possible by computers which can sort, organize, and manipulate information, test alternative courses of action, and communicate executive instructions to

subordinate units. The tools to do this already exist and will continue to be improved. However, politico-military application requires new attitudes and new ways of thinking. A good deal of research must be done by practical-minded military men to make these tools useful in an operational environment.

The field of computer technology is one in which the United States is likely to maintain a substantial lead, and this lead must be exploited. Progress on the World Wide Military Command and Control System will allow unified and specified commanders, as well as the National Command Authority, to tap vast amounts of data. The effective use of these data poses a challenge for the future. Procedures and software must be developed which permit on-line interaction between various echelons of command. Mathematical algorithms must be made available for on-line calculation of optimal solutions to operational as well as planning problems. Simulation and war gaming models must be created which permit rapid testing of proposed solutions. Techniques are also needed for monitoring on-going operations via linked computers so that commanders can anticipate crises before they occur. These are not easy tasks, yet they are within U.S. technological and organizational capabilities, provided the best military and civilian talents are dedicated to them.

## HYDROFOILS AND SURFACE EFFECT SHIPS

Shifting to the future of surface ships, significant improvements in hydrofoils and surface effect ships are likely to be made in the next 10 to 15 years. Hydrofoils appear to be

weight limited by the strength of existing or immediately foreseeable structural materials. Estimated upper limits of displacement are in the vicinity of 500 tons with maximum foilborne speeds of up to 50 knots. It is estimated that, given adequate R&D, 2,000 - 3,000 ton surface effect ships capable of speeds up to 80 knots can be built by 1985. The more avid proponents of these ships claim that 4,000 ton prototypes can be built by 1980.

These ships which attain maximum performance above the air-water interface share some limiting characteristics. One severe limitation lies in the range-speed-payload tradeoff possibilities which are much more constrained than for conventional ships. For example, one design for a 500-ton hydrofoil estimates foilborne range to be 1,200 nautical miles at 45 knots with a military payload of 56 tons. Its range can be extended to 3,900 nautical miles only by operating hullborne at 12 knots. Forecasts for 1980 estimate that 500-ton gross weight surface effect ships can be operational with a range of 1,200 nautical miles at 80 knots with a military payload of 90 tons. For comparison, a conventional 2,000-ton ship for ASW and escort roles can be built today with a range of 5,000 nautical miles at 15 knots, a maximum speed of 35 knots, and a payload of 300 tons.

Another limiting characteristic of hydrofoils and surface effect ships is their poor seakeeping quality. Both suffer severely degraded performance in high sea states. At the

extreme, they are unable to operate above the sea-air interface, thus losing their unique performance capabilities. An example of the difficulty facing surface effect ships in rough seas occurred when the British hovercraft SRN 6 capsized in March 1972, killing at least four people. The accident occurred in tailwinds of 30-40 knots, waves up to 8 feet high, and an average distance between waves of 60 feet. Operating limits specified for this type of hovercraft are a maximum tailwind component of 25 knots, wave height of 5 feet, and a critical distance between waves of 36 to 72 feet.

The advantage which hydrofoils and surface effect ships offer over conventional ships is speed, and the relative advantage of 10 to 15 knots provided by hydrofoils is not very large. Surface effect ships offer more potential but at the cost of very high power requirements. Neither type appears to be any less vulnerable to antiship attacks than a conventional ship. Their relative invulnerability to torpedo attacks is offset by the fact that missiles now comprise the principal threat to surface ships. When all is considered, conventional ships have many valuable qualities which make them unlikely candidates for large-scale replacement by other ship types by 1985.

One aspect of hydrofoils and surface effect ships which is absent from the literature surveyed deals with mission analysis for these craft. Since the advantage of speed is accompanied by some severe penalties, including considerable R&D cost,

the potential payoff in fleet effectiveness under various circumstances must be clearly understood. Extensive war gaming should be conducted using a variety of scenarios both with and without hydrofoils and/or surface effect ships. The degree to which fleet capability is or is not enhanced by these new types of vessels should give critical insights into the advantage of further development. Other alternatives, such as improved aircraft or aircraft-ship combinations and even seaplanes need to be examined. The seaplane, for example, offers a considerable speed advantage with the capability to operate in international waters.

## VTOL TECHNOLOGY

No revolutionary breakthroughs in the state of the art of the aerospace industry are foreseen for the period studied. Systematic advances in overall technology are likely with evolutionary improvements in hardware.

Assuming that new attack aircraft carrier construction will fall short of requirements, the Navy will have to look toward smaller ships to augment the carrier's air strike/defense capability. In this regard, the proposed Sea Control Ship, in conjunction with VTOL fighter and attack aircraft, seems to be a prime candidate. In addition, ships such as the DD963, LPH, and LHA should be configured to exploit the advantages of the VTOL aircraft of the 1980s. The major advantage of the VTOL aircraft over the conventional jet aircraft is its flexibility of operation. The VTOL aircraft requires no catapult or arresting

equipment and can operate from small ships as well as in forward areas ashore without airfields. It is not proposed here that VTOL aircraft should replace conventional jet combat aircraft, but rather that VTOL aircraft are ideally suited to augment conventional jet combat aircraft.

For the limited conflicts that are most likely in the next 15 years, the Sea Control Ship, or a similar VTOL carrier, in company with a few smaller ships may be adequate or even preferred over the CVA in certain situations.

A review of VTOL technology indicates that with improvements in propulsion and/or structural materials, VTOL aircraft can approach the payload carrying capabilities of present carrier based combat aircraft. Every effort should, however, be made to minimize size and weight of VTOL combat aircraft in order to maximize the number of ship types that will be available to operate them.

## NAVAL TECHNOLOGY 1972-1985

A general implication of the technological environment is that problems relating to naval technology in the 1972-1985 period are not those of invention, but those of adoption. In surveying the available technology and forecasts for the future, it becomes obvious that present-day technology is not being adopted rapidly enough in naval hardware and naval operations. Current debates on antiship missiles, defenses against such missiles, and automation of warships exemplify the problem. Technology is likely to continue its advance, whether supported

by the Navy or not, and the prospect for the future is an ever-widening gap between available technology and technology of the fleet. U.S. naval superiority in the past one-fourth century has led to a belief that if something has worked for 30 years it must be good. It is hard to argue with success, but as the Navy enters a new era of international relations combined with a rapidly changing technological environment, traditional doctrine seems less relevant and traditional approaches to technology less likely to assure military superiority. The Navy must organize itself to adapt to rapidly changing technology as a way of life. This means greater involvement of line officers in R&D. It also means more naval personnel on shore directly engaged in some phase of technological support, and fewer men at sea operating the hardware.

Future capabilities of the Navy must be oriented toward politico-military objectives and not just military objectives alone. In some cases the political advantages offered by a weapon system may outweigh its military disadvantages. It is conceivable, for instance, that having many inexpensive, expendable ships in the role of presence forces may be more advantageous than having a few highly survivable expensive ones. Future emphasis must be placed on responsiveness to the National Command Authority, economy, mobility, flexibility, and accuracy. New concepts of data transmission and message handling must be built into every level of command so that real time flow of vital information can be achieved. Severely reduced budgets

will force military managers to use greater imagination in maximizing return on investment. A low overseas military profile with continued U.S. international involvement will require forces which can be moved quickly to crisis locations. These forces must have multipurpose capabilities to deal with a range of activities from humanitarian relief, through varying intensities of conventional warfare, up to and including nuclear exchange. The future combat environment will frequently entail sanctuaries and targeting constraints. Thus, equipment and techniques for navigation and delivery, whether of ordnance or cargo, will have to provide consistent accuracy in order to minimize errors and the possibility of inadvertent escalation.

The overall technological environment for the next 10 to 15 years, then, is characterized by a decreasing margin of superiority for the United States, proliferation of technical knowledge in the world, and rapid change. Fortunately, much of the technological environment is controllable, but the rate of change in technology as it affects the U.S. Navy will be so much greater than in the past that new ways of thinking and organizing must be devised to cope with it. The Navy will have to develop a strategy to manage technological change in order to keep from being overwhelmed by it. A key feature in developing such a strategy is the emphasis on greater involvement of naval officers in technology to accomplish the main tasks which are:

1. Minimizing the effect of technological surprise

from outside the United States.

2. Taking an activist role in joint R&D projects for common weapons and weapon systems.
3. Minimizing the tendency to overdesign hardware and overspecify military requirements.
4. Designing systems which are less labor intensive.
5. Developing the full potential of computers to augment human intellect in naval applications.
6. Performing mission analysis for proposed systems.
7. Planning for obsolescence and seeking systems of maximum salvage value which are flexible enough for refit with the latest advances in technology.
8. Bringing politico-military considerations to bear on weapons R&D.

Section Two--

# A VIEW OF SURVEILLANCE AND COMMAND

CDR A. D. McEachen

## INTRODUCTION

Surveillance and command systems employed by the Navy through the mid-1980's are discussed at length in classified literature prepared by and for the Department of Defense. A survey of this literature has resulted in the following unclassified condensation of a research effort covering some of the opportunities open to the Navy in these two important categories of military operations.

## SURVEILLANCE TECHNOLOGY

It is anticipated that many surveillance programs undergoing exploratory development at present could result in new sensor systems by 1985. Most of the opportunities imply, either simply or in various combinations, seismic, acoustic, magnetic, electromagnetic, optical, and infrared (IR) sensing. Advanced logic will be available and could, if applied, eliminate the problem of false alarm.

Signal detection and processing logic, integral to a weapons platform, will be capable of discriminating target types through the use of techniques to recognize acoustic, electromagnetic, IR, optical, or other distinguishing marks of the target platform. Hence, the full effectiveness of weapons systems can be pursued with the solution of the always present target identification problem. At present, the utilization of air-to-air or surface-to-air missiles to their maximum range capability in combat situations is limited by the requirement for positive identification of threat vehicles.

Another point to consider is the set of options open to future surveillance in electro-optics and optical technology. It is significant that only two known bands in the entire electromagnetic spectrum support propagation underwater and through the air-water interface in both directions. One is the limited capability at ELF while the other is the optical band containing blue-green light, about 0.47 to 0.53 microns. The band can theoretically support surveillance from a sensor located under, on, or above the ocean.

Insofar as the technological prognosis of optical surveillance in general is concerned, during the next 20 years it has been projected that laser sources will cover the entire optical spectrum from one-tenth to one thousand microns. These sources could essentially duplicate current radio frequency technology. The expected capabilities include a high degree of frequency tunability and agility, all forms of radio frequency modulation, agile beam pointing, and improved power efficiency.

Nonphotographic imaging techniques will predominate in optical surveillance in 20 years. The general trend toward smaller and lighter imaging devices will continue. Furthermore, imaging techniques will be applied above and below the ocean surface. Applications not concerned with underwater surveillance will cover the entire optical spectrum. Heavy use will be made of the IR spectrum because of the desire for covert active surveillance as well as passive surveillance where radiations in the IR band are detectable. Imaging of underwater targets,

or of the disturbance caused by their passage, will be used with sensors above and below the water's surface. Underwater imaging will be largely range gated systems operated in the blue-green region of the spectrum.

Important features of electro-optics and optical surveillance systems are:

(1) Resolution of images to the limit of the propagation media;

(2) Tunability and frequency diversity over the spectrum available;

(3) Availability of a large spectrum;

(4) Small volume and weight relative to nonoptical surveillance systems;

(5) High reliability and ease of maintenance;

(6) Target detection and identification in environments hostile to conventional radar such as low altitude and high clutter;

(7) An undersea surveillance capability.

The significance of the last point is substantial. The employment of electro-optic surveillance from submarines, surface, airborne, and even satellite platforms could revolutionize submarine and ASW operations.

The foregoing is not to suggest that electro-optics is the only surveillance capability with great merit forecast for the future. Indeed, acoustic technology offers much promise. Transducer developments, for example, are projected

to achieve the following:

(1) A successful low frequency, high power transducer array for coherent detection of submarines at long range;

(2) Chemical-explosive transducers for detection of submarines at long range by the use of transients;

(3) Transducers for finite amplitude operation, including those designed to exploit nonlinearity of the medium for generation of low frequency sound, i.e., parametric sonar:

(4) Acoustic measurement technology utilizing acoustic holography and near field arrays.

Achievement of the foregoing promises substantial improvements in long range acoustic surveillance from mobile or stationary platforms and in both the passive and active modes.

The above considerations of surveillance possibilities over the next decade and a half are intended only to reflect the possibilities in fields that consist of well known technology at the present time. Indeed, technological opportunities for surveillance improvements are numerous. The choice of which to concentrate upon represents the most difficult decision confronting planners at the present time. To determine which of the bewildering array of surveillance techniques merits the highest development priority, it is considered prudent to assess the means for distributing the sensor information to centers for decisionmaking. This leads to techniques for reduction and transfer of data and ultimately to assessment of future prospects in command, control, and communications.

## COMMAND INFORMATION

The effectiveness of command and control systems of the future will reside in their ability to transfer sensor and command data flexibility, rapidly, and securely. The assessment of technical capabilities to perform this task starts with a projection of digital computation technology. The development of fast, flexible, reliable, compact digital computational facilities is essential to deliver the real time data transfer capability necessary in the face of ambient noise, interference, and hostile electronic countermeasures. The development and use of such technology implies a substantial departure from current reliance on the LF through HF range. Moreover, this departure will be necessary to match the anticipated expansion in data handling requirements. As an insight to expected increases, Navy message traffic alone has traditionally doubled every 4 years. The resulting collection of antennae and communications equipment has been crowded aboard ship with little regard for integrated engineering and operating considerations. Thus, it is likely that the use of much higher frequencies, ranging from UHF through the electro-optical frequencies, will be essential to achieve the reliability, flexibility, capacity, and security over distances ranging from line of sight to global.

It is noteworthy to observe the projected special needs of submarine communications. Submarine communications are growing in significance because of the increasing need for

close coordination with other platforms in a tactical environment. Nevertheless, the physical boundary imposed by sea water and the sea-air interface severely handicaps the flow of command information. It can be concluded that submarine requirements will involve, among others, operations in the electro-optical range where propagation through sea water is possible.

It is not a coincidence that the same technology, i.e., electro-optic propagation, should appear when discussing advanced technology for both surveillance and communications. In reality, surveillance can be visualized as an extension of command information. New data are regularly being entered into the system. For example, new data can originate from a reconnaissance report reflecting a change in an adversary's force location and disposition. Simularly, there is a great deal of friendly information that could be redefined as command and control data. Rules of engagement are a case in point. ROE are certainly predetermined command and control data and should be displayed as such as opposed to the treatment accorded them on an obscure printed page in a operation order. The most important point, however, is that both friendly and nonfriendly data must flow with equal freedom to the decision-maker.

The discussion of surveillance and command systems in terms of a common technology, i.e., electro-optic, leads to

a realization of the need for coordinated development of these systems. Demands on a naval force commander in a hostile environment during the mid-1980's will be compounded. A wider use of the electromagnetic spectrum can be expected from an opponent. Decreased decision time will be available. It follows, then, that command and surveillance system developments must be closely coordinated. This is a reiteration of the essential point that both own force information and data generated on the enemy must be equally available to decisionmakers if Navy resources are to be employed to their full capability.

Consideration of the most productive utilization of Navy resources opens the question of its organization. A natural outgrowth of the normal command level organization of the Navy, i.e., by platform type, is the introduction of a boundary between operations among subsurface, surface, and air components. The boundary inhibits missions involving submarines, ships, and aircraft by virtue of the difficulties involved in exchanging data among these disparate forces. Thus, in a very important sense, developments in command, control, and communications will define the limits of fleet effectiveness in the rapid paced hostile military or political environment of the 1980's. The command data systems that are developed to cope with this environment must diffuse the boundaries mentioned above. The penalty paid for developing command and surveillance systems independent of one another will be

severe, for it will limit the opportunities for integrated fleet operations.

The technology for integrated operations is available, it has been described briefly above and at greater length elsewhere. The challenge facing the Navy is to organize its resources in such a way to achieve a fully integrated force employment. An essential element in achieving the goal of fully integrated fleet operations in the 1980's is the ability to transfer both surveillance and command data rapidly, flexibly, and securely among all components of a Navy force functioning in a sensitive political or military environment.

Section Three--

FORECASTING TECHNOLOGY

CDR A. D. McEachen

# INTRODUCTION

In a recent article, Professor Robert Nisbet, a University of California sociologist, took to task a fascinating pastime when he pointed out the pitfalls of attempting to predict the future. He noted that scientists and futurologists are likely to rely upon principles of trend fitting, a store of data and data interpretation that technology makes possible. But he rhetorically asked, what does it profit us to work up constructions of the future in a world of random events, when these sometimes cataclysmic events have to be ignored in our predictions?

Extending the logic of this argument leads to differentiating what is outside the realm of prediction and what lies within that arena. For it is those elements of the future that have their roots in the present that can be predicted. To elaborate on the theme, powerful technological, mathematical, and computer tools are of little value to predict events which defy correlation with a definable probability of occurrence. In these instances the imagination and insights of mentally disciplined men are as promising as the most rigorous scientific analysis. Yet any number of predictions by innovative men of the past can be arrayed to portray the folly which frequently accompanies assessing the future. Notwithstanding, President John F. Kennedy stated in the early 1960's the United States would place a man upon the moon within the decade. The United States did precisely that with the epic descent of Neil Armstrong

from Eagle.

In short, there is validity in attempting to forecast the future and the validity of the forecast is sharpened when the individual shaping the forecast exercises control over events.

## NAVY DECISIONS

With regard to the Navy, the foregoing considerations suggest that the future of the Navy is most directly shaped by decisions and actions that have their roots in the present and are within the Navy's control. The decisions and actions that will have the most extended impact upon the Navy are strongly rooted in the organizational arrangements of the Navy institutions responsible for these decisions and actions. The ability of those elements of the Navy to cope with the changing future are to a large extent dependent upon their capacity to anticipate change. In order to appreciate the problems inherent in the effective utilization of change, it should be profitable to digress into the techniques of forecasting future technology.

## FORECASTING TECHNIQUES

The serious question of how to cope with failures of nerve and imagination in predicting the Navy's future leads to an examination of technological forecasting as a tool to cope with change effectively.

It has been suggested by Kahn and Wiener that technological upheavals occur spontaneously but at a frequency somewhat

greater than one per decade. Further, technology has been observed to be advancing at a nonlinear and accelerating pace. By contrast, our thinking process appears to behave in a linear fashion. Thus, there is immediately a divergence between our intuition of the future and the demonstrated pace of technological change.

There has also been a tendency to misinterpret and exaggerate the discontinuities in the plot of technological progress. The belief has been expressed that progress is the exclusive result of scientific discoveries. Frequently overlooked as an agent of evolutionary change is the application of available technology. Indeed, the ability to organize an enterprise to adapt to change requires one to take advantage of this smoothing factor in the curve of technological progress.

Another factor which must be accounted for in planning future systems is the anticipated progress of a rival. In the Navy this clearly refers to Soviet progress. If one overestimates an opponent's future capabilities, the penalty will be overexpenditure at the beginning of a weapons system cycle. The penalty for underestimating on the other hand, is lost time and increased expenditures during or at the end of a project when the totals will be amplified. It is postulated that the ability to look ahead successfully and assess, for example, opponents' probable system development plans is the characteristic of individuals, not organizations. By contrast, there are substantial incentives for bad planning in institutions such as the Navy. The retention of a formerly useful bureaucracy

is one example. Hence, the necessity is seen for a periodic renewal in outlook toward change and innovation. There exists a definite necessity to encourage this renewal in a fashion that enhances the opportunity for renewal to become part of the fabric of the organization. Two sure ways to eliminate renewal are first, to resist it, and second, to eliminate those who are responsible for it. Thus, an organization such as the Navy must consciously seek a path that manages change.

The flexible acceptance of the revolutionary influences of technology can be enhanced in the Navy by perceptive Technological Forecasting (TF). Techniques of TF should be used to moderate the surprise connected with technological breakthroughs and more positively to prepare the Navy to take advantage of innovations in technology as soon as possible. It is appropriate, at this point, to digress into a brief review of the purpose, method, and capacities of TF and to investigate appropriate organizational arrangements to take advantage of the technique.

To begin, it is worth noting that a source of confusion exists over the purpose of technological forecasting. The utility of technological forecasting does not necessarily depend upon the prediction of the precise form technology will take in a given application at a particular future date. Like economic, financial, or even weather forecasts, TF's purpose is to evaluate the probability and significance of various future events. The need for TF is as basic as the

need for good decisions.

Technology--knowledge of physical relations--varies continuously over time. The variations can range from incipient technology, such as initial appreciation of the application of a basic physical law to a practical problem, up to a mature technology. Innovating product, device, or production processes in a fully operational system is an example of the latter. In both cases performance improvement is normally in reasonably small increments over time. The nonlinear or even discontinuous advance in technology is usually an accumulation of smaller advances, not of themselves worthy of discrete introduction until they cumulatively make an important impact on knowledge. Additionally, a particular technology is ordinarily composed of competing devices, fulfills divergent needs, and is capable of a variety of dissimilar functions. It is this disparate but somewhat reasonable continuity in technology that makes technological forecasting possible. Again, the product of a forecast is a probability statement about performance characteristics that a particular class of technology will be able to provide by a designated time in the future.

A number of techniques have been developed for technological forecasting. They all require the integration of past experience with the insights of competent and imaginative people. Each additionally requires the observation and measurement of underlying data, trends, and interactions.

One category of TF involves five steps to determine whether technical systems can reach or exceed key parameters

by a specified future date:

(1) Select a limited number of performance characteristics which can be quantified and are significant measures of advance;

(2) Include ranges as well as most likely values wherever possible in plotting anticipated performance characteristics;

(3) Precisely identify the phase of the technological advance to be followed. For applied research advances, performance levels should normally be plotted at the time technical feasibility is statistically proved in full-scale, full-duration tests;

(4) Document the major assumptions used in preparing projections. Assumptions might include the influence of external policy decisions, the expected influence of interactions among selected parameters, interdependencies with other technological areas, and the magnitude of breakthroughs requires;

(5) Include a best estimate of the probability of meeting, exceeding, or falling short of the projection, given the expected resource commitments.

Applications of the foregoing include for one, predicting points at which the substitution of one technology for another is productive. Other applications include analyzing unique properties of a system or component, developing threshold trends in technical economic performance, and analyzing substitution growth curves.

Additional techniques of technological forecasting include the theoretical limits test. An example of this would

involve pushing a known apparatus or phenomenon to its theoretical limits and then attempt to postulate the implications. A means of checking the validity of the forecasts generated in the theoretical limits test is to have a group of experts refine the estimates of the theoretical limits through successive approximations. After the final iteration of the experts or group of experts, the degree of consensus and range of diversity in the reports can be used in calculating probability statements in a consolidated forecast. The foregoing is known as the Delphi technique.

Navy Application. A TF technique of particular interest to the Navy can be termed adversary's actions. Forecasting techniques are employed which show how an adversary's technical actions will affect the Navy. While this general concept is rather substantially practiced by the Navy's Scientific and Technical Intelligence Center, much more could be done to integrate the results of adversary actions into the Navy's long range decisionmaking. Some specific techniques to forecast adversary action include:

(1) Life cycle models which can show how opponents' actions can erode or nullify our own future system developments.

(2) Technological mapping which can evaluate opponent strengths in fields of interest. Network diagrams portray all significant approaches to an end result in question and the opponents known position on each approach is assessed.

(3) Strategic analysis which can indicate where an opponent will place his technological emphasis. Awareness of opponent strategies assists in identifying where Navy resources should be devoted in order to take advantage of strengths and weaknesses of adversaries.

A discussion of technological forecasting is not complete without a discussion of its shortcomings. For one, unpredictable interactions can produce events that can shatter forecasts. Secondly, unprecedented demands can be stimulated by the emergence of new technologies that have self-amplifying effects and create a whole new range of demands never recognized before. Third, major discoveries of whole new phenomena may open significant new technological opportunities.

Turning finally to TF organizational considerations, two factors are significant. First, the actual arrangement of an organization such as the Navy should feature staff planning and program evaluation groups to conduct long range planning including some of the techniques described above. Also, the results of the long range planning should be fitted into the normal decisionmaking routine. The decisionmakers perspective will be broadened, and potential shortcomings of the forecast will surely be assaulted.

Insofar as the Navy is concerned, technological forecasting is practiced informally to a rather substantial degree. However, the forecasts normally concern themselves with the state of technology in a given discipline such as lasers and acoustics.

The application of TF to potential opportunities and pitfalls in naval warfare has been lacking. Activities that bridge the gap between technology and naval operations such as parametric analysis of surveillance and command data flow are likely to be the first to experience the formal application of technological forecasting.

# Part Six--

# THE MILITARY ENVIRONMENT

Section One--

# THE CHANGING WORLD AND ITS EFFECT ON THE MILITARY

CDR E. R. Kohn

## THE MILITARY AND THE FUTURE

The future world environment and the perception of a lessening threat will affect the size of the armed forces. Moreover, the Vietnam war will have forced an examination of the limits of the U.S. ability to influence the course of events in foreign nations and of the nature and extent of the U.S. defense commitment to allies.

The combination of these factors and the continuation of the Nixon Doctrine will decrease the incidence of intervention and involvement.

The military's ability to determine and to acquire the capability required for the future will be most difficult. Yet military strength and an apparent will to use that strength will remain an important element in international relations. The basic national interest of preservation of the United States as a free and independent nation, the preservation of national institutions and values, and the protection and advancement of the welfare of the people will obviously not change. What will obviously change in their relative degrees of importance are the other factors of national power. The challenge of multipolarity lies in the effective orchestration of the various elements of national power. In this environment, military force will have to be used with greater imagination and subtlety than in the past.

Even in a multipolar world, the primary military threat to the security of the United States will remain the Soviet Union.

Although there is no apparent danger from "monolithic communism," it is dangerous to assume that there will be no threat from the Soviet Union. Soviet capability must be continually assessed and met. However, the economic competition between the United States and the Soviet Union with the latter utilizing all the advantages of a government controlled and dominated industry and merchant marine will be the most serious challenge to the United States.

The military's primary concern will be the maintenance of a nuclear strategic deterrence system consisting of the nuclear destruct capability, strategic intelligence, and an infallible command and control system. Yet political, economic, and strategic constraints will preclude the attainment of nuclear strike capability in excess of "nuclear sufficiency."

Conventional ground forces will diminish in value as an effective political instrument. The emerging balance of power will constrain widespread conflict. Restraint in the use of conventional forces has both domestic and international implications. It will be essential because of the attitude of the American people, who have demonstrated a growing disaffection for the use of force, and because the nations of the world are displaying a growing sense of their own integrity. Military intervention, if needed, will have to be less conspicuous, and less an expression of unilateral power than a common endeavor. Restraint will also be governed by the spheres of influence of the other members in the power structure. General purpose

forces beyond those necessary to defend basic American interests or the maintenance of a conventional deterrence are bound to be viewed as aggressive.

Much has been written concerning the positive and negative prospects of a conventional confrontation between major powers. It is unlikely that a direct military conflict could be rationally controlled for more than a very short duration without terminating in negotiations or escalating to a nuclear exchange. The escalation potential makes conflict possibilities minimal. Yet, conventional forces, particularly naval forces, which are more likely to directly encounter an adversary, must retain a credible conventional deterrence which inhibits the irrational act jeopardizing national prestige or security. This does not require a numerical parity, but an ability to rapidly and effectively respond to the threat.

Another factor that will affect the size of the armed forces, in addition to the perception of decreased military threat in a multipolar world, is the range of domestic demands. The primacy of internal political, economic, and social issues in the mind of the public will be accompanied by a relative lack of interest in international problems. This is a natural tendency in a democracy when an external threat, real or perceived, fades. Defense expenditures will increasingly be determined by general economic considerations, and in this area American society may well be in chronic difficulty (balance of payments, unemployment, overeducation et cetera). Defense

expenditures will come into competition with what are thought of as equally compelling domestic needs.

A smaller share of the national budget will increasingly require military strategy to be driven by economic considerations. The conceived national objectives will be supported by restricted military capabilities. In order to support the national objectives within fiscal limitations, the Military Establishment must become more efficient. Improved command and control facilities will assist in the efficient utilization and battle management of limited assets. But perhaps more important is the need for a continual review and evaluation of the organization missions and tasks of each service to eliminate duplication of effort. Economic considerations should force greater joint utilization of facilities and assets. When there are similar functional characteristics, such as certain training areas and logistical requirements, initiative should be made to combine efforts. The military must become less resistant and more active in attaining economic savings through the elimination of redundancies. If the efforts are not accomplished through prudent internal effort, then undoubtedly domestic political effort will force a more dramatic, perhaps drastic, reorganization. Unification is not outside the realm of possibility.

The changing attitudes of peoples towards the military, including societal change in general, will continue to challenge the ability of the armed forces to remain a viable fighting

force. Where the intelligent, educated, responsible individuals required to run the increasingly sophisticated "war machines" will come from has not yet been satisfactorily answered. It is likely that a sufficient number of qualified, patriotically or romantically inclined individuals will be available to fulfill the requirements of a reduced Armed Forces. But the traditional distinction between officers and enlisted may be an irritant that precludes retention of the highly qualified noncommissioned technician. While discipline and order naturally remain essential, a serious evaluation of the officer and enlisted relationships will be necessary.

## THE NAVY AND THE FUTURE

Assuming present rates of growth, the expansion of economic activity will require increased access to both resources and markets around the world. More than 97 percent of the materials that the countries of the world exchange will continue to be transported by sealift--the most economical method available. The more technically advanced and economically sophisticated the United States becomes, the greater will be her dependence on overseas commerce and the unrestricted use of the sea. Therefore, the legitimate use and freedom of the seas will be more important than ever to national security and progress.

The potential of the oceans as a source of food and minerals is huge. The United States must be prepared to extend and protect its interests in developing the ocean resources. This will require new agencies, missions, and a new national

maritime policy. Multilateral cooperation in observation, inspection, and enforcement of international agreements on the sovereignty and use of the seabeds will become an important function of navies. The United States should ensure cooperation and, indeed, furnish the initiative in attaining international agreeements concerning seabed treaties and multinational policing.

A serious concern of the future is the United States increasing dependence on foreign flags for transporting materials to compete in the world markets. The country's influence in the world, the national security, and a thriving economy depends on commercial as well as naval ships. The future economic and political challenge presented by the Soviet ensign, flying from Russian commercial vessels in all the ports of the world, may be a more serious threat to American stature than has been Soviet military forces. National attention and resources should be focused on the rejuvenation and development of the merchant marine and other maritime commercial interests as a viable, competitive force in peace, as well as an essential element in war. The Soviets have dedicated the resources necessary to become a leading maritime power. The resolve of the United States to maintain her position in this area appears questionable.

Although the direct application of military force will decrease in the multipolar world, the continued dependence

by the United States on free access to the sea in order to maintain vital economic and strategic ties will enhance the validity of the naval mission to recognize and counter hostile use of the sea to insure the ability to use the sea. The definition of sea control, however, should be understood not to mean the absolute control of all the oceans, but the ability to exert local control of an area at a given time without the prohibitive interference of an opposing force. The unique capability of the Navy to rapidly project her power or maintain a presence in support of U.S. policies without impinging on the national sovereignty of others or creating logistic problems that involve political entanglements will continue to be of paramount importance.

Subtle application of naval forces to influence friends and foes in deterring conflicts and controlling crises will be an increased function in the multipolar world. But the ability to interpose will become increasingly difficult as the primary adversary's naval force increases in prominence. Successful naval force application in crisis management will require extensive intelligence and rapid covert mobility. Shifting rules of engagement will require increased flexibility and responsiveness to the National Command Authority.

The technological advances in ocean surveillance, target acquisition, and missiles have seriously jeopardized the future of the surface combatant. Unless protected by aircraft, surface vessel survivability and effectiveness are

limited in an era when less developed countries have demonstrated the capability to employ sophisticated weapon systems. "Hide or go fast" should be the primary consideration for future ship designs. The need for rapid mobility, threat factors, and economic limitations will require a continuing analysis of the viability of surface combatants as conventional deterrents. Increased reliance on the subsurface vehicle in combination with air capable platforms appear to be one feasible trend. However, a number of fast surface combatants will be needed for missions which require the psychological effect of visibility.

Decreasing force size will make impractical the specialized one mission conventional combatant. All combatants must be capable of adequately thwarting the most sophisticated air, surface, and subsurface threat and be capable of accommodating VTOL aircraft. Versatility of performance will be essential for the optimum employment of a numerically limited Navy. The future surface combatant, in addition to being versatile, must be capable of rapid and far-ranging operations over long periods of time with minimum reliance on overseas bases and logistic support.

## ROLE OF THE NAVY

The future basic roles of the Navy will differ little from those of today. Although the changing world decreases the application of a projection power force, the requirements for

a viable, rapidly reactive capability will remain.

Nuclear deterrence will remain the primary instrument in preserving the United States as a free and independent nation. The Navy's role in national strategic security, although already an important one, will increase. The mobility and continued invulnerability of underwater systems have special appeal as fixed ICBM systems are exposed to the uncertainties of the effects of a first strike threat.

The surface combatant potential as a nuclear deterrent force will continue to diminish as surveillance and counter-force capabilities improve. Yet, Soviet resources dedicated to neutralizing the aircraft carrier give emphasis to its relative importance in this role. The aircraft carrier's mobility and tactical nuclear ability will continue to sustain its existence as a minor element of nuclear deterrence.

The ability to discourage an adversary from initiating a lower level conflict because of fear of a rapid, flexible and decisive response will retain significant importance in the multipolar world. With the continued reduction of over-seas profile and contraction in overseas basing, greater dependence will be placed on the Navy for this function. The carrier strike force with its ability to accommodate the transition from low-level conflict to nuclear warfare will retain its prominence as a credible deterrent force.

Without the ability to dominate a specific area of the ocean and operate with minimum interference from an adversary,

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Without the ability to dominate a specific area of the ocean and operate with minimum interference from an adversary,

Humanitarian relief, training of foreign navies, and civic action and training programs will increase in importance as tensions lessen. Domestic action and educational training programs should be effectively coordinated and budgeted as a unified effort of the Department of Defense.

Section Two--

# NAVAL FORCE APPLICATION IN A MULTIPOLAR WORLD COMPARED WITH A BIPOLAR WORLD

CDR E. R. Kohn

LTCOL J. G. Ling

## POTENTIAL CONFLICTS

A key question facing the study group on the Long-Range Future of the Navy (Phase II) dealt with the implication of multipolarity on worldwide application of naval forces. A list of potential conflicts and crises in the 1972-1985 time frame was developed by Lieutenant Commanders Strasser and Wyttenbach to aid in the analysis. Although the list was by no means exhaustive, it represented the types of situations which have implications for the U.S. Navy and are most likely to be encountered in the time frame under study. The 58 situations considered were:

1. Conflicts directly concerning the Soviet Union.
    a. Jurisdictional disputes with Baltic States over seabed resources and fishing
    b. Soviet suppression of satellite regimes
    c. Berlin crisis or West-East German confrontation
    d. Macedonia crisis (Bulgarian claims to part of Yugoslavia)
    e. Internal struggles within Yugoslavia on death of Tito
    f. Soviet support of India in border conflict with PRC
    g. Soviet-Chinese border incidents
    h. Soviet jurisdictional disputes with Japan (over lands and/or seabed/fishing rights)

i. Internal struggle in Afghanistan, Iran, or Turkey

j. Use of the Black Sea and its strait

k. Various territorial jurisdictional disputes among the East European states

2. Conflicts directly concerning Western Europe.

a. Gibraltar dispute between Great Britain and Spain

b. Malta base rights issue

c. Turkey vs. Greece over Cyprus

d. Seabed and fisheries (plus ecology/pollution) issues among Western European states

e. Ireland issue

f. Undesired nuclear armament of a Western European state, particularly West Germany

g. German reunification issue plus Berlin.

h. Internal nationalities problems (Belgium, Spain, South Tyrol, Brittany, Wales, Scotland

3. Conflicts within the Middle East-North Africa.

a. Israel vs. Arabs (renewal of war, announcement of nuclear status, use of nuclear weapons, et cetera

b. Suez Canal issue

c. Radicalism in Arab States (including possible transfer of power to radicals in Jordan, Saudi Arabia, Iran, Union of Arab Emirates, and other oil-rich Arab states).

d. Local wars among the littoral states of the Persian Gulf (Iran, Iraq, UAE, Oman, Bahrein, Saudi Arabia)

e. Internal struggles in any state in the area with or without outside intervention (South Sudan, Eritrean movement in Ethiopia, South Yemen, Kurds in Iraq)

f. Territorial disputes (Spanish Sahara, Tunisian-Algerian)

g. Breakup and partition of Jordan or Lebanon

4. Conflicts within South Asia.

a. Bangladesh (foreign influence, chaos, etcetera

b. Indo-Pakistan issues (Bangladesh, Kashmir)

c. India (1. Soviet influence and bases; 2. Separatist movements Nagas, West Bengalis, Assam; 3. Nuclear armament; 4. Border clashes with PRC )

d. Leftist insurgency in Ceylon

e. Territorial disputes between Pakistan and Afghanistan, PRC and India, Pakistan and Iran

f. Soviet/United States confrontation over presence and base rights in the Indian Ocean

5. Conflicts within Africa (Sub-Saharan)

a. Political instability within any of the black African states (including tribal warfare, riots, dissidence)

b. Colonial issues (Portugal)

c. Local wars (territorial disputes)

d. South Africa and Rhodesia problem (including Namibia)

6. Conflicts within East Asia

   a. Japan vs. PRC (seabeds, fisheries)

   b. North vs. South Korea

   c. Taiwan and offshore islands (disputes with PRC, Japan, and Philippines)

   d. Taiwanese dissidence

   e. Hong Kong and Macao issues

   f. Internal problems in China (power struggle, Tibet, Sinkiang, Inner Mongolia)

   g. Nuclear armament of Japan

7. Conflicts within Southeast Asia

   a. Current war in Indochina

   b. Singapore (political instability, access to base)

   c. Insurgencies within Thailand, Burma, Malaysia, Indonesia

   d. Territorial claims (Philippines vs. Indonesia over Sabah, Portuguese Timor)

   e. Philippines (internal political dissidence, insurgency)

8. Conflicts within Latin America

   a. Hostility between El Salvador and Honduras

   b. Panama's desire to conclude a new canal treaty

   c. Falkland Islands dispute between Argentina and Great Britain

   d. Insurgencies, particularly in the Caribbean area

e. Territorial waters disputes (seabeds and fisheries)

f. Internal instability in many of the states, particularly the economically stagnant Caribbean states

g. Soviet bases in Cuba

9. Conflicts within Canada

a. United States vs. Canada over northern sea passage (freedom of the seas, territorial waters jurisdiction, pollution)

b. French-Canadian dissidence/insurgency

c. Seabed oil rights (Bay of Fundy)

NAVAL FORCE APPLICATIONS ANALYSIS

These conflicts/crises were discussed individually in the context of a bipolar world to determine whether it was in keeping with U.S. interests and alliances to become militarily involved. If the decision was affirmative, the group then decided what role the Navy would play and what type of naval force would be required. After the scenarios were analyzed in a bipolar context, they were analyzed in a multipolar context. The results of these analyses are shown in table I:

Table I

Naval Force Applications

| Scenario | Bipolar World | Multipolar World |
|---|---|---|
| 1. Soviet Union | | |
| a. Baltic States | None | Small presence force of surface ships |
| b. Suppression of satellites | None | None |

| Scenario | Bipolar World | Multipolar World |
|---|---|---|
| c. Berlin crisis | Carrier task forces on northern & southern flanks of Europe. | Noncarrier presence force |
| d. Macedonia | Carrier task force & possible amphibious landing force. | None |
| e. Yugoslavia | Same as (d). | None |
| f. India vs. PRC | Heavily protected carrier task force. | Same as bipolar |
| g. PRC border dispute | None | None |
| h. Dispute with Japan | Noncarrier presence force for interposition. | None |
| i. Afghanistan, Turkey, & Iran | None, evacuate Americans by air | Same as bipolar |
| j. Black Sea | Noncarrier task force & amphibious force | Participate in multilateral, noncarrier force to guarantee freedom of access |
| k. East European disputes | None | None |
| 2. Western Europe | | |
| a. Gibraltar dispute | None | None |
| b. Malta | None | None |
| c. Cyprus | None | Noncarrier presence force for interposition |
| d. Sea Resources | Offer good offices for policing | Same as bipolar |
| e. Ireland | None | None |

| Scenario | Bipolar World | Multipolar World |
|---|---|---|
| f. Nuclear armament | None | None |
| g. German reunification | None | None |
| h. Nationalities problems | None | None |
| 3. Middle East | | |
| a. Israel vs. Arabs | Carrier & amphibious task forces in Med. | Same as bipolar in Med. Possible contribution to multilateral landing force for peacekeeping in Persian Gulf |
| b. Suez Canal issue | Same as (a) | None |
| c. Arab radicalism | None | None |
| d. Local wars | Carrier & amphibious task forces | Same as bipolar |
| e. Internal struggles | Same as (d) | None |
| f. Territorial disputes | Same as (d) | None |
| g. Jordan, Lebanon | Same as (d) | None |
| 4. South Asia | | |
| a. Bangladesh | None | None |
| b. Indo-Pakistan issues | Heavily protected carrier task force | Same as bipolar |
| c. India | Same as (b) | Same as bipolar |
| d. Ceylon | Same as (b) | Same as bipolar |
| e. Territorial disputes | Same as (b) | Same as bipolar |
| f. Indian Ocean | Same as (b) | Same as bipolar |

| Scenario | Bipolar World | Multipolar World |
|---|---|---|
| 5. Africa (Sub-Saharan) | None | None |
| 6. East Asia | | |
| a. Japan vs. PRC | Noncarrier presence force for interposition | Same as bipolar |
| b. North vs. South Korea | Localized sea control force & heavily defended carrier force | Same as bipolar |
| c. Taiwan & Islands | Same as (a) | Same as bipolar |
| d. Taiwanese dissidence | None | None |
| e. Hong Kong & Macao | None | None |
| f. China internal | None | None |
| g. Nuclear Japan | None | None |
| 7. Southeast Asia | | |
| a. Current war | Carrier task force | None |
| b. Singapore | Carrier & amphibious task forces stressing air defense rather than air superiority | None |
| c. Insurgencies | Same as (b) | None |
| d. Territorial claims | None | None |
| e. Philippine internal | Carrier task force & naval gunfire support | None |
| 8. Latin America | | |
| a. El Salvador vs. Honduras | None | None |

| Scenario | Bipolar World | Multipolar World |
|---|---|---|
| b. Panama | Carrier & amphibious task forces | Same as bipolar |
| c. Falkland dispute | None | None |
| d. Caribbean insurgencies | Carrier & amphibious task forces | Same as bipolar |
| e. Territorial waters | None | Noncarrier presence for interposition |
| f. Internal instability | Carrier & amphibious task forces in Carribean but not farther south | Same as bipolar |
| g. Soviet bases | Increase surveillance and use trailing force for Soviet naval units | Same as bipolar |
| 9. Canada | None | None |

Table I shows that U.S. military involvement was deemed possible in 29 of the 58 scenarios for a bipolar world and in 21 of the 58 scenarios for a multipolar world. Naval forces generally considered for use in these scenarios consisted of attack carrier task forces, amphibious task forces, and presence forces without attack carriers. The presence forces could include small ships capable of handling VTOL aircraft, but the main consideration was that they would not contain anything comparable to present day CVA's. In many of the scenarios the study group felt that the presence of a large combatant might overwhelm the situation, and the loss of such a ship could have serious diplomatic repercussions. A summary of force employment by type for the 58 scenarios is shown in table II:

## SUMMARY

### Table II

Summary of Naval Force Employment by Type and Scenario Category in Bipolar and Multipolar Worlds from Table I.

| Scenario | Carrier | | Amphibious | | Presence | |
|---|---|---|---|---|---|---|
| | Bi | Multi | Bi | Multi | Bi | Multi |
| Soviet Union | 5 | 2 | 4 | 2 | 2 | 3 |
| Western Europe | 0 | 0 | 0 | 0 | 0 | 1 |
| Middle East | 6 | 2 | 6 | 3 | 0 | 1 |
| South Asia | 5 | 5 | 0 | 0 | 0 | 0 |
| East Asia | 1 | 1 | 0 | 0 | 2 | 2 |
| Southeast Asia | 4 | 0 | 2 | 0 | 0 | 0 |
| Latin America | 2 | 2 | 2 | 2 | 1 | 2 |
| Total | 23 | 12 | 14 | 7 | 5 | 9 |

Table II shows that in a multipolar world, carrier and amphibious task forces were used in about half as many situations while presence force were used in about twice as many situations as in a bipolar world. It also shows that in the South Asia and East Asia scenarios there was no difference in naval force employment between a multipolar and bipolar world.

Another way to look at the employment of naval forces is by ocean areas as shown in table III:

### Table III

Summary of Naval Force Employment by Type and Ocean Areas in Bipolar and Multipolar Worlds from Table I.

| Ocean Area | Carrier Bi | Carrier Multi | Amphibious Bi | Amphibious Multi | Presence Bi | Presence Multi |
|---|---|---|---|---|---|---|
| Atlantic Mediterranean - Persian Gulf | 10 | 3 | 10 | 5 | 1 | 5 |
| Pacific | 6 | 2 | 2 | 0 | 3 | 2 |
| Indian Ocean | 5 | 5 | 0 | 0 | 0 | 0 |
| Caribean | 2 | 2 | 2 | 2 | 1 | 2 |
| Total | 23 | 12 | 14 | 7 | 5 | 9 |

Table III shows that in a multipolar compared to bipolar world, the greatest decrease in number of situations requiring carrier and amphibious forces was in the Atlantic-Mediterranean-Persian Gulf area. There was also a decrease in the Pacific area while there was no change in the Indian Ocean and Caribbean.

This simple analysis was performed to give the study group members a better feeling for the naval implications of multipolarity. There was no attempt to weight the scenarios according to their relative impact on U.S. national interests. Neither was any attempt made at force sizing, but the applications of this technique to force sizing are obvious. The general methodology and the scenarios are offered here as a guide for more refined analyses which should prove useful in recommending strategies as well as size and composition of future naval forces.

The conflict situation involving a major war between NATO and Warsaw Pact nations was considered unlikely and was

not included in the list of 58 scenarios. This was in keeping with the assumptions set forth in Part One of this study. However, major war in Europe was discussed as a worst case, short of all-out nuclear exchange. In considering the Navy's roles in such a war it was apparent that protecting the North Atlantic sea lines of communication dealt with only one link in the logistics chain joining the CONUS to consuming units in Europe. Just how strong this link should be would obviously be influenced by the strengths of the other links. Therefore, defining the type and strength of forces needed to protect shipping in the North Atlantic requires a reexamination of the United States strategy for Europe in light of:

1. United States' capability to mobilize and deliver men and supplies to CONUS ports of embarkation.

2. NATO's capability and willingness to provide sea transportation.

3. The reception capability of European ports.

4. The capacity of European intratheater lines of communication.

5. Points 2,3, and 4 above in a hostile environment, with particular consideration to probable actions of NATO nations in the face of potential destruction to their homeland.

A large ready naval force to assure the safety of sealift to Europe in a hostile environment will not be needed if the European port facilities and intratheater distribution systems are nonavailable or nonexistent.

Part Seven--

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# BIBLIOGRAPHY

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