1970 A CHALLENGE TO PLANNERS

SUMMARY REPORT

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A CHALLENGE TO PLANNERS

FOREWORD

Planning Philosophies

No one can properly dispute the need for planning. It is a need which will develop even more forcefully in the next decade than it has in the last, because of the increasing rates of change in the factors influencing human life. In totalitarian states, such as those now calling themselves the "peoples' democratic replublics," planning is carried out on a highly centralized basis. By contrast, in the United States planning is carried out in many competitive, decentralized units. Both techniques have advantages and disadvantages. In centralized planning, great singleness of purpose and expediency are easier to attain, but the possibility of desirable innovations is extremely limited. In decentralized planning the agreement on common purposes and common strategies is hard to achieve, while innovation is emphasized. In industry, the US has long recognized the need for decentralization and competition. In government, our policy is less clear; our maintenance of a number of competing agencies for most government functions seems to show that we practice decentralized planning here whether we approve of it or not.

To secure a high rate of progress among decentralized planners, and therefore to get as much as possible of the benefit of innovation as well as of speed, we must emphasize the development and communication of common purposes and the rapid communication of planning data among all of the planners involved. Old techniques of forecasting based on the extrapolation of trend lines must give way to new techniques based on a deeper insight and better relationship among the planning factors which are involved. Here at TEMPO -- the Technical Military Planning Operation of the General Electric Company -- we are trying to establish a systematic approach to planning involving three major phases. These are: (1) estimating the future environment in which our plans are to be carried out; (2) inventing or synthesizing technological developments which are called for by the environment; and (3) evaluating and comparing competing plans.

It is evident that in addition to being a risky process, planning is also cyclic. A plan of any magnitude which shows up well after evaluation can have a very important effect on the future environment against which it was originally conceived and evaluated. In this sense it is essential that the planning organization itself be a relatively small and well-knit group. We see not only a great deal of interplay among the various kinds of scientists needed to make reasonable environmental predictions -- we see also that these people must meet frequently with those who are inventing the new systems and those who are carrying out the comparative evaluations so that the results of any significant invention or the suggestions coming from any relative evaluation may be brought into their thinking and made a part of the intuitive background against which they make their major predictions as rapidly as possible.

While the primary purpose of planning at TEMPO is to develop military systems plans, it is essential in this process to give a great deal of consideration to non-military factors. This necessity is supported by the von Clausewitz statement that "war is an extension of policy by other means," or the more current communist doctrine that "peace is an extension of conflict by other means." Our way of saying it is that the farther we look toward the future the harder it becomes to distinguish between a purely military and a purely civil enterprise. Both have strong influences on our national defense.

There are as many ways of expressing a forecast as there are forecasters. From a business standpoint we find it interesting to organize the forecast around three major items: (1) the demand in terms of world population, demography, and human desires; (2) the available resources in terms of living space, energy sources, materials, facilities, and knowledge; and (3) the relationships in terms of organizations, political considerations, military force, and ideologies.

Factors in Planning for 1970

By far the dominant factor in determining the degree of peace and well-being which we may expect in the next decade is the explosion of human population in relation to the growth of resources. The effect of the growth in population is compounded by increasing literacy and speed of communication, so that the world-wide demand for food, clothing, shelter, transportation, communication, security, love, and respect may be expected to grow even faster than the population.

Technological growth in the decade ahead will bring about greatly increased productivity of the inhabitable areas of the earth and will make some regions now sparsely settled able to take care of more people. But it seems unlikely that the developments in energy production and distribution, in agriculture, manufacturing, transportation, and communication will be able to keep up with the spiraling demand rate, unless progress in bioscience and education make possible a significant step toward matching the human birth rate to the death rate. This seems improbable at this time.

An inevitable result of the failure of the race to meet new demands from available resources will be continued change in relationships. Much of this change will be made by military rather than by peaceful methods. The great desire by the growing numbers of people for improved standards will couple with the strong trend toward nationalism to produce violence in many areas. In furtherance of their cold war aims the communist governments of Russia and China will try continuously to exploit these conflicts. But true support of nationalism is not consistent with their objectives for the long term, and it may backfire against them elsewhere as it has in Yugoslavia.

In terms of military significance to the US, these changes do not reduce the need for us to maintain continuously an inexorable force capable of dealing a crushing blow to any aggressor nation no matter what has happened first. Beyond this we must shoulder our responsibility as leaders of the Free World and continue to maintain highly mobile forces both at home and abroad to deter local aggressions, to restore situations where these have started, and, perhaps before the end of the decade, to take initiative action in support of friendly populations who have started something they have not the strength to finish.

Another element in our military posture which could be decisive is our ability to defend our homeland both actively and passively from long-range strategic attack. With the growth of military forces in several countries during the next decade capable of bombing the US and each other, we shall find that our large strategic deterrent force, designed to prevent all-out war, will buy us less and less in terms of the day-to-day negotiations of diplomacy. Continental defense is an activity in which a goal cannot readily be defined. The rapid growth in the size and variety of the threats which may be brought to bear against us, the great complexity of the defense action, and the problems of countermeasures mean that we can never spend "enough" to guarantee an airtight defense posture. Even the

process of obtaining a reasonable level of active and passive defense will be very expensive. At the same time, we must not lose sight of the advantage which could come to us in negotiation if we were able to be more sanguine about the risk of all-out war. We may well be the only nation which can afford a reasonable defense in the next decade. If so, it would be a step toward restoration of the great military advantage which we frittered away in the late 40s and early 50s.

The course of development of the inexorable retaliatory force, discussed above, seems fairly clear through 1970. To be inexorable, this force must survive any possible attack in strength sufficient to penetrate enemy defenses and destroy his major cities. We now depend on long-range aircraft as the principal vehicles of this force. We are gaining relative security for this force by improving our attack warning devices and by increasing the speed with which the force can be sent on a war mission.

But Soviet development of a ballistic missile capability could quickly neutralize our strategic advantage. Our own developments in ballistic missiles are currently aimed at a deterrent force which will be secure against attack by virtue of its being stored in underground shelters rather than by being quickly launched. By the late 60s it will be technically possible for a force in underground shelters to be damaged quite effectively by pre-emptive attack. Hence we shall then probably adopt the submarine launching platform as the principal location of our deterrent retaliatory force. Sometime beyond 1970, but probably before 1980, we may be compelled to take another step to secure our deterrent force. Quite logically we might put our force on standing alert out in space. Our ability to take this step will depend on our solution of numerous problems associated with operations in space; these in turn will depend upon our diligence in aggressively pursuing basic research and upon our adoption of a national policy that supports continued progress in all of the needed technologies.

R. C. Raymond
Manager - TEMPO

1970 -- A CHALLENGE TO PLANNERS

SUMMARY

This report is a summary of results attained in the first year's work aimed at an interdisciplinary environment prediction. To make the problem manageable within the manpower and resources available during 1958, it was limited in time to the 1965-1970 period; a number of significant omissions in scope have been inevitable. During 1959 it is planned to extend the study in time and scope to reach out to 1975 and to fill some of the major areas of uncertainty. As the investigation proceeds during 1959, the results of concomitant studies in system synthesis and evaluation will be incorporated in the final product. By the end of 1959 a much improved forecast can be expected, both in breadth and depth. Some of the significant conclusions developed in the 1958 study are the importance of:

* The growing responsibility of the US public, industry, and government to understand, evaluate, and plan during the next decade for the living conditions resulting from a significant population increase

* The continuing need for more and better education, based on future estimates more than on past performances

* The great need for innovations in the biosciences which will make it possible to match death control with birth control on a world-wide basis

* The continuation of severe international political competition and conflict

* The growth in intensity of international economic conflict

* The tremendous growth and change in nature of the energy industries

* The continued rapid growth in electronics, for both civilian and military purposes

* The need for training at all levels and for continuous management reorganization in both government and industry in response to improvements in data processing for decision-making, and for other improvements in technology

* The need for public understanding of the dominance of technology in the military defense of the nation and to the decision-making aspects of defense

* The continued need for a secure, inexorable retaliatory force for deterring total war

* The decline in the unilateral strategic air power supremacy of the United States

* The importance of both active and passive defense of the US from air and missile attacks

* The continued importance of intelligence and reconnaissance activities

* The continuing high probability of limited wars and military "police actions"

* The importance of logistic aircraft and air transportable ground forces for limited war use

* The growth in importance of the submarine for both civil and military purposes

* The importance of the development of basic capabilities in space travel

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This TEMPO Report represents a combination of the findings of a number of individual contributors to TEMPO Project 068 -- Environmental Factors, and of the review of these findings by staff members of the Environment Operation. A listing of the studies prepared in support of this Project will be found at the end of this publication. The review was accomplished by a panel composed of Dr. Richard C. Raymond, Manager -- TEMPO ex-officio chairman, Brig. Gen. Harry O. Paxson, (USA-Ret.), chairman, Dr. Hilton P. Goss, Dr. James W. Moyer, and Capt. David B. Young (USN-Ret.).

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GUIDELINES FOR LONG-RANGE PLANNING

In looking ahead to the 1965-1970 period, the first task should be to assess the various factors against which planning must be done. Some of these factors include areas that will remain constant no matter how the inhabitants of the world are aligned politically, economically, socially, culturally, scientifically, or in any other way. Every planner must make some basic assumptions and go forward from them. Perhaps we may believe that there are forms of life on other planets much like on our own -- or forms much different from the varieties to be found on earth. But we should probably reach early agreement that, even if by 1965-1970 we discover such beliefs to be well-founded or illusory, the basic facts of life on our own planet will not be appreciably changed by that date.

We take it that many of the relations that have obtained between human beings and their physical environment on earth for the past dozen centuries will not have altered unrecognizably by a decade from today. Food, shelter, well-being, and social acceptability will still be the major concerns of the earth's human population. Mankind will still be attempting to control, to subdue, or at least to meet on comparatively favorable terms, what we choose to call nature -- the elements, the animal and plant life, the resources of the soil, and the air, and the water -- and the uncertainties of existence that surround it. Neither an invasion from Mars (or some other planet), nor the conquest of man by insects is apt to have occurred by 1970. Therefore we can be concerned with the equally serious, but much more probable struggle for survival on terms that we already know and with which we have had some experience.

More than ever before, the American people must be concerned with the future world into which we are moving with unrelenting swiftness. If it was ever true that we, as a nation and as individuals within a nation, could ignore the future of places and peoples outside our own continental boundaries, it is no longer true.

We need cite only such phenomena as super-high-speed air travel, essentially instantaneous global communications, the widespread image of modern information media, expanding populations,and -- in some areas -- shrinking natural resources, to indicate why today's American must think about tomorrow's world. That world is crowding in on him and its presence is more evident and more real every day. Politically, we may be a long way from a federation of the world and the parliament of man. But physically and socially we are already one people. The earth is, de facto, "one world" and we -- along with the inhabitants of the other 125 or more national units mapped on the globe -- are citizens of it*.

So, for reasons of simple existence, we must know our way into the future. Some things may be left to chance, to accident -- or even to predestination. But planning is too important to be treated in this fashion.

In order that we may be able to picture the future we must possess knowledge of the present and the past to the degree that they form a bridge for progressing into the future. Not all the lessons of the past can be applicable in planning for tomorrow. Many things are changing rapidly, even some of the most stable and constant factors are showing signs of alteration. We must be able to grasp the significance of change without becoming mesmerized by our observation of this phenomenon. Our look into the future must not blind us to the eternals that give us guidance or to the stepping stones that keep us out of the torrents. The planner must keep moving ahead, attractive and beguiling as it may seem to linger over the events and legends of the past.

Translated into more practical terms, we have an immediate and a continuing need to sketch -- and in many instances to delineate fully -- the form of things to come. What suffices for today's needs will by tomorrow be outmoded, obsolete, and unwanted.

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*Acknowledgment should be made at this point of the omission from the series of studies prepared for this Project of detailed reports on such geographical areas as Europe (West, Central, and Satellite), the Soviet Union, the British Commonwealth, and that in Latin America. These, and other political units will be treated in subsequent studies, most probably during 1959.

The enormous costs and technical complexities of weapon systems are compounded by the lead time required to put them into effective employment for national defense. What we design and what we build must be the product needed and one that can be utilized when it is ready for delivery. To be more certain of this, we have to know for what environmental situations the planners are scheduling the products we manufacture. We are faced with the requirement to do more than state the specifications for the weaponry of the future -- we must also furnish the most probable specifications for the future.

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A WORLD OF 3.5 BILLION INHABITANTS

Among the many factors that will influence the future into which we are moving, the tremendous growth of the world's population will probably be the single most significant development that will affect planning for the next decade. Demographers tell us that by 1970 there will be some three and a half billion people on this earth. There are approximately 2.69 billion today. This means an increase of 30 percent -- at an average rate of 2.5 percent each year -- with no more land and no more resources than we can expect to see made available in the immediate period ahead. Geographically we may take several areas of the world and show figures for expected population growth in a graphic manner. (See Chart I).

Whenever new advances in medicine, sanitation, food supply, and control of natural impediments to population expansion are introduced in any extensive fashion, the average death rates are even further reduced. Decreases in infant mortality, extension of life expectancies, new horizons for migration and settlement, all combine to populate new areas and to crowd further the already closely inhabited portions of the globe.

As average death rates are reduced, and as average birth rates increase, population growth becomes both absolute in the numbers of persons alive at a given time and relative in terms of the discrepancies between the birth and death rates that are used for the basis of calculations and those that actually may prevail in the future. Simultaneously, ignorance, religious customs, and economic and social indifference operate to limit any substantial reduction in the birth rates of many of the regions of the earth least able to support greater populations.

We see, therefore, in the world of 1965-1970 multitudes requiring land for living, food for sustenance, and facilities for mobility that will bring new demands upon governments to provide the outlets for this burgeoning host. Even in periods of plagues, famines, great wars, or other disasters some quarters of the globe not directly affected by these agents of reduction have seen population expansion. Such devices of governmental decreases

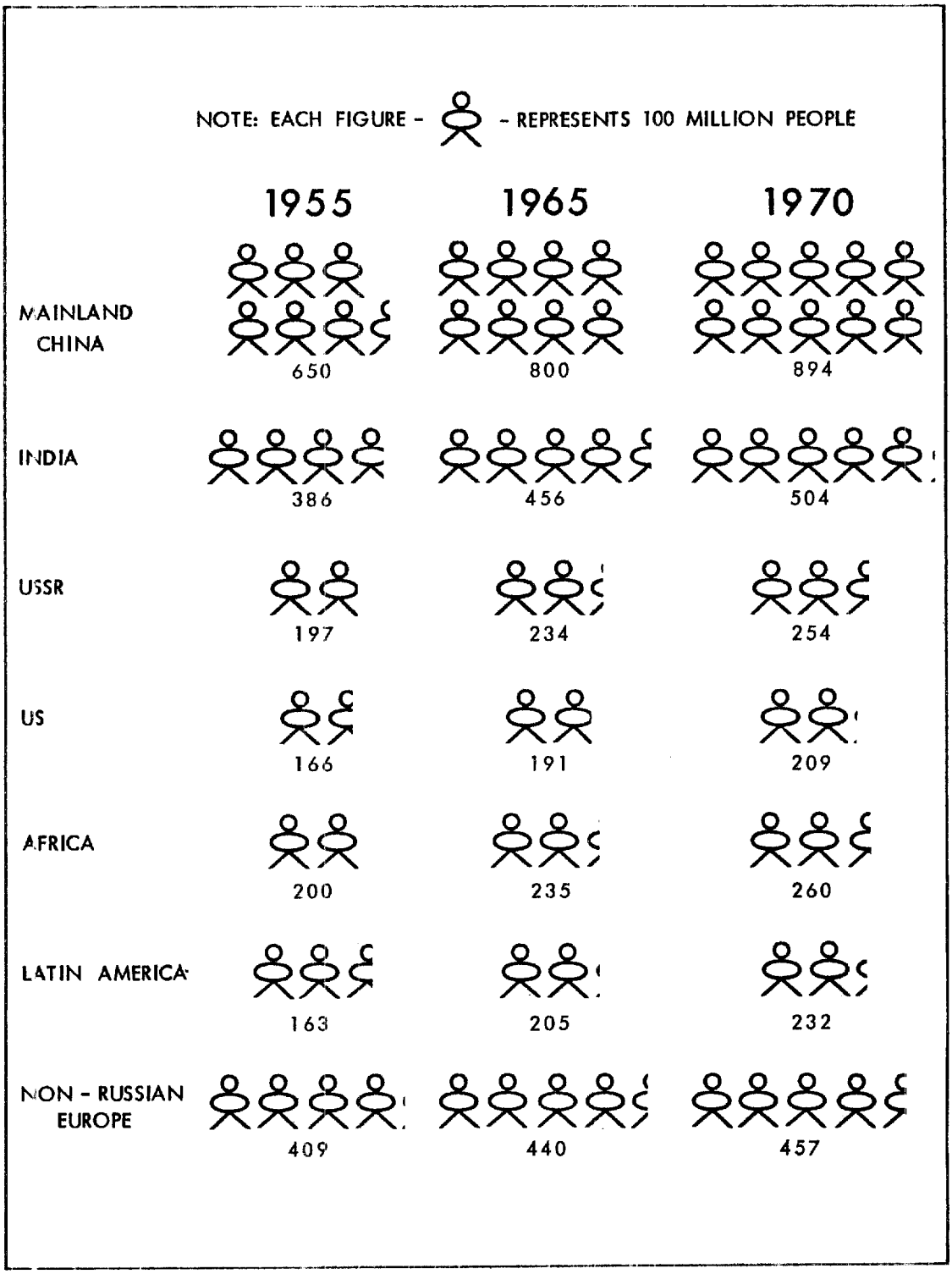

Chart 1. Estimates of Population of Selected Areas

of populations as genocide, liquidation of the Kulaks, massacres of the Armenians, the slaughter of the innocents in Biblical days, are not likely to be repeated on any considerable scale in the future -- because they are politically dangerous and do not make more than a momentary dent in the population growth curve. Any marked decrease in population growth -- except by devastating all-out war -- must take place primarily in terms of positive controls of the birth rate. By 1970, or even for a decade or more after that date, the use of such controls to affect appreciably the expected population explosion is quite improbable.*

What this population explosion portends in terms of material needs alone is obvious. New developments in agricultural processes, land utilization, soil conservation and improvement, distributive facilities, and the like will tax the ingenuity as well as the financial resources of many nations. Ten years from today it may be incumbent upon some international organization such as the United Nations to enter the arena of worldwide control of food resources for purposes of insuring adequate standards of survival and health for all the people of the globe. This will not be primarily a political matter -- it will be mainly a necessity in an age of rapid intercommunication and movement of peoples to guard against the spread of communicable diseases that thrive on malnutrition and lowered bodily resistance because of insufficient nourishment.

The expected population explosion may also mean that relocation of peoples from overcrowded areas will become imperative and that this will have to be accomplished on an international basis rather than on a basis of aggressive pushing out by imperialistic design on the part of individual powers. What this signifies, politically, economically, and demographically in the cases of such expansion-minded governments as that of Communist China, and even of India, Egypt, Indonesia, and others, indicates the seriousness of this problem. Although the urge to embark upon imperialistic ventures may not always be the accompaniment of population pressures at home, as is illustrated by the example of the Soviet Union where there

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*C.G. McClintock's studies in this series, especially RM 57TMP-3 (1958 Re-issue), give consideration to these factors. See also his RM 58TMP-24 and RM 58TMP-58, as well as portions of the political and economic studies relating to India, Communist China, Japan, and Southeast Asia.

is room for internal expansion, it is a probable result of overcrowding. So, as world population grows, we may see new imperialistically inclined powers ready to follow the patterns set by European nations in the past. The role played by population pressures in the ill-fated experiences of Italy in Libya and Ethiopia, of Japan in the Far East, is well known. But nations, like individuals, are not always apt to learn by a study of history.

We must also be concerned with the future of the natural resources available for the expanding population of the world. Where and when will adequate water supplies be available for the millions who will inhabit both the older and the newer lands of the earth in 1970? Present consumption of water is already creating problems in many areas. Lack of sufficient water is today hampering the development of numerous overpopulated regions and is denying other regions to those who would move in if water could be brought to the points of need.

Yet, even where water is at present sufficient for today's requirements, we (and other peoples) are using it with a prodigality that endangers the future of millions. New methods of obtaining water -- by more efficient tapping of existing resources, by conservation, by desalinization of sea water, etc. -- must be utilized, or many sections of the world will be on the edge of aridity, and growing populations will be contending over water sources as they have in the past over gold, spices, oil, or other desired items. The beginnings of international strife over water resources are already exemplified in the tensions plaguing the Middle East.

As if the problem of water were not enough, the quest for available lands, the search for mineral necessities for an industrial-technological civilization and the demand for adequate sources of food will magnify the rivalry of peoples. All these will be the very roots of the need to survive if the population explosion is not accompanied by, or preferably preceded by, efficient and courageous planning on an international scale.

Because the coming population explosion will directly affect the United States, we should examine some of the indications for this country. By 1970 -- based on an average annual increase of 2 percent -- the population of the United States should reach about 209,000,000. (See Chart II).

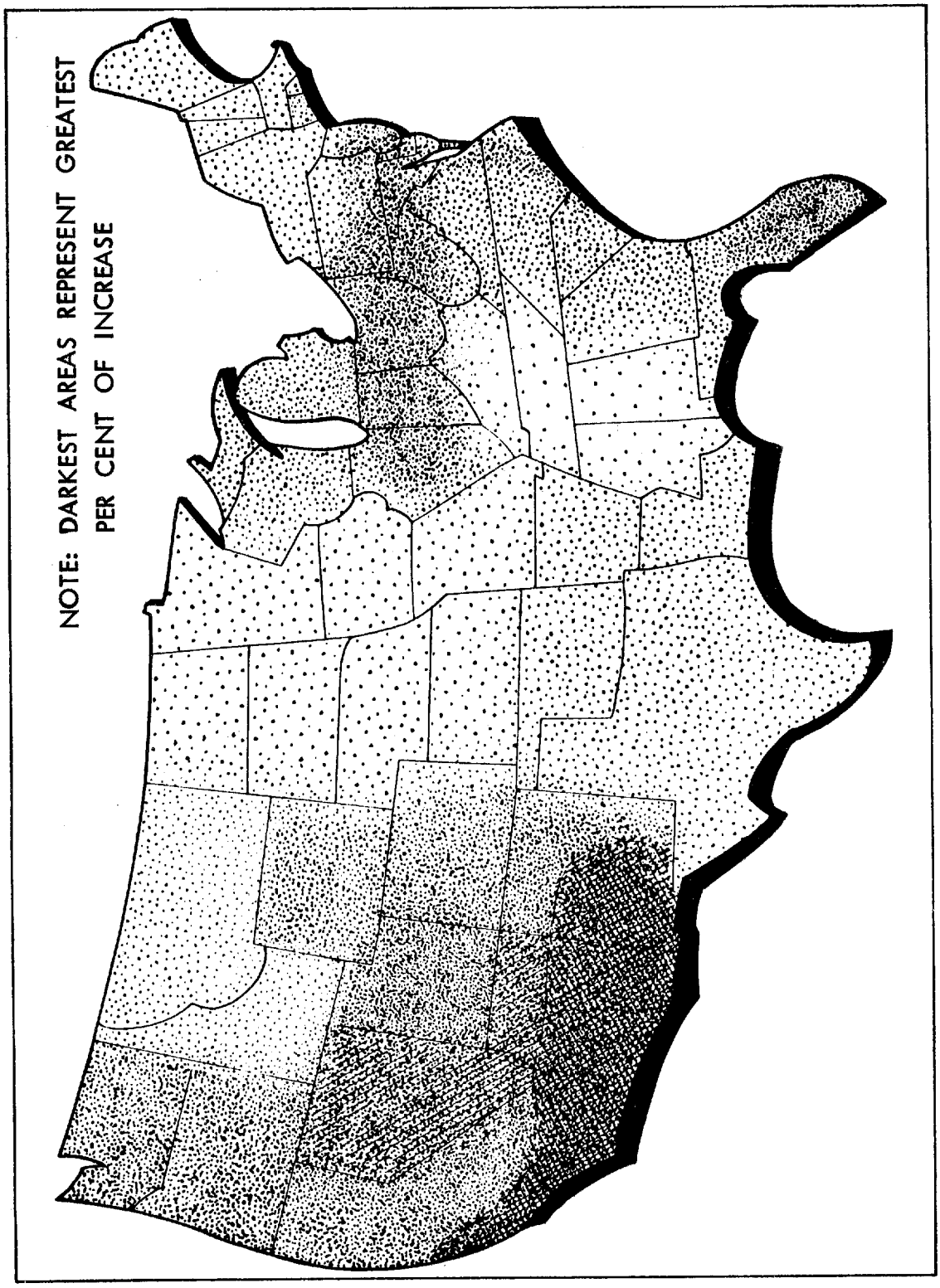

Chart II. Population Increase 1955 - 1970

Our population lives essentially in family groups. Trends in family formation indicate the likelihood of some 11,000,000 new family groups being added to the numbers now current. While combinations of various members of a family grouping account for some of the new groups, the majority of the additions to the family group count will come from marriages and will reflect as well as cause an increase in birth rates. Together with the growth in family groups there will be a rise in the demand for new households. Forecasts indicate that this demand will require about one million new households per year within the next decade, rising to 1.5 million per year by 1970.*

It is clear that the radiating effects of population growth are comparable to a chain reaction. However, it is more pertinent to interpolate the effects in terms of the demands that will be created by 1970 for educating one-third more children in the elementary schools of our country than we are enrolling today. At the higher levels of education, similar increases in the number of students will take place, not only as a result of population growth but also because of social, industrial, and national security pressures.** Some of the projected requirements in respect to educational facilities are presented in Chart III. We submit that the significance of this information for planners is abundantly evident -- whether they plan in terms of future customers for their goods or for future manpower and skills to manufacture those goods.

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*The implications of this increase in terms of needs for appliances, power, utilities, etc. are impressive. A. B. Nadel in his study RM 58TMP-51 discusses some of these implications. See also his RM 58TMP-52. See also "A Billion People in U.S.?" U.S. News and World Report, XLV: 72-84, 28 November, 1958, which indicates that appliance sales may triple after 1970.

**Detail analyses of the expectations in educational requirements will be found in C. G. McClintock, RM 58TMP-57, and A. B. Nadel, RM 58TMP-51 and RM 58TMP-52. See also D. H. Webster, RM 58TMP-46.

	1955	1960	1970
HIGH SCHOOL TEACHING POSITIONS	371,000	458,000	625,000
COLLEGE AND UNIVERSITY TEACHING POSITIONS	196,000	250,000	495,000
RESEARCH & DEVELOPMENT $ EXPENDITURES	$5.5 BILLION	$6.1 BILLION	$8.1 BILLION
ENGINEERING JOBS	700,000	950,000	1,550,000

Chart III. Scientific and Professional Manpower Requirements 1955 - 1970

As in the United States, so in many other areas of the world the coming population explosion will bring demands for more education, more conveniences, more material advantages.. But it will bring other demands as well.

What, the, will be the life of man ten years from now? How can he cope with the problems that will be crowding in upon him wherever he may live? How will he survive the inevitable disappearance of the older, more independently-managed type of society? What can he contribute as an individual to the highly complex and integrated modern social order? The amazing resourcefulness of the human race is the intangible factor of the future, as it has been the wonder of the past. Whatever we may expect of man -- what he will be like a decade hence, what he will accomplish or fail to accomplish, what he can endure, what he can imagine, and what he can demonstrate in the way of ingenuity, resiliency, and mobility -- we can safely say that he will both surprise and confound us.

We can attempt to chart some of the resources man will have to build within himself and will have to put at the disposal of the future. It seems obvious that with increased industrialization in many hitherto agrarian regions of the earth multitudes of men, and especially of women, will enter the labor forces of most countries. Even in such an advanced nation as the United States, for example, average annual employment is expected to rise from 60 million in 1955 to more than 76 million in 1970.* The increases in nations where the disparity between them and the US has been great will clearly be much more spectacular. Communist China is a good example of what may occur in this respect.**

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*A. B. Nadel, RM 58TMP-52, discusses this point in some detail.

**See L. Krader, RM 58TMP-56, and F. Michael, RM 58TMP-42 for some facts on this point.

As this growth in the labor force, to serve increasingly industrialized economies, manifests itself -- whether here at home or in areas abroad -- the equally obvious fact that millions will become concentrated into urban areas, confronts the planner. How this concentration will be reflected in greater needs for transportation, housing, health, and welfare facilities is a commonplace. But, it must also be emphasized that much of this growth will be at the expense of formerly agricultural areas, although the movement will be slower in some regions than others. Proportionately there will be fewer people left to farm and to raise the food that will be required for the growingly urbanized multitudes that have neither the ability nor the resources to survive without this supply. So, it becomes plain, the urban dweller of the 1965-1970 period will be more than ever dependent upon a social system that causes him to rely upon a structure over which he has little control.*

At the same time, this urbanized civilization will compound the problems of vulnerability to all the uncertainties of a complex series of threats. These threats will be more than those of security from armed attack. Too great concentrations of population -- and especially concentrations that are brought about by increases in the technological intensities of the present and future -- will present targets for wars and strategic attack that cannot be ignored -- and, in truth, cannot be tolerated if national security is to be achieved. We shall hear more and more as we move into the coming decade of the need for areal and urban planning, for dispersion, for civil defense, for evacuation planning, and the like. Unfortunately, too little attention is being devoted to this problem by planners on every level. It is a matter for serious future investigation and analysis on a scale we have not been able to undertake in this project.**

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*C. R. Nixon, RM 58TMP-38, D. H. Webster, RM 58TMP-46, and A. B. Nadel, RM 58 TMP-51, treat this subject at some length. Other papers in the series make particular mention of specific areas in connection with the trend toward urbanization.

**See A. B. Nadel, RM 58TMP-51; D. H. Webster, RM 58TMP-46, etc.

Aside from the physical vulnerability to attack, these urban concentrations are open to a number of other possible dangers. Concentrated population areas will be vulnerable to natural disasters such as floods, hurricanes, tornadoes, and unusually severe storms -- in greater or lesser degree as planning for such events has been neglected. Likewise they will be in peril from health hazards such as epidemics, air pollution, contamination of water or food resources, etc. In addition, all the ills of economic depressions, financial panics, shifts in economic roles, mechanization and automation, obsolesence, and the rest will fall heaviest upon the populations of metropolitan or single urban centers. As if this were not enough, such areas will be always vulnerable to the political hazards of poor government, demagoguery, inadequate intergovernmental cooperation, and similar dangers that will mean higher taxation and less return in the form of public services.*

There are advantages in urbanization provided sufficient planning and foresight accompany the trend. We may suggest here that, in general, urban growth has heretofore been too haphazard to be healthy and that we do not see sufficient signs of improvement at a rate that will overcome the disadvantages by 1970. But every effort that is expended to avert the dire consequences of too great and too rapid urbanization will increase the outlook for future adjustments.

We see that urban man in 1965-1970 will be more dependent upon what we may call "social security", at the same time he is less able to withdraw from the system and "go back to the farm", as was possible in earlier generations when adjustment to the vicissitudes of industrial life seemed simpler. We doubt that things were actually easier in the past -- the difficulties were probably made less apparent by conditions of the time. But the certainty exists that life for a far greater proportion of mankind will be more complex in the future and that more complex methods will be required to simplify the problems of living.

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*Many of these factors are discussed in D. H. Webster, RM 58TMP-56, C. R. Nixon, RM 58TMP-38, A. B. Nadel, RM 58TMP-51, etc.

Concurrently, we cannot afford to look at the plight of the man still on the land with any less concern. His lot, in spite of mechanization and improvement in agricultural processes, will not be materially better than that of his urban brother. Unless discovery paces itself faster than rural deterioration, the agrarian population will find it more and more difficult to feed itself as well as to grow sufficient foodstuffs for the human and animal life so dependent upon it. Whatever methods and moves there are in the future to redistribute surpluses and to reinvigorate marginal lands they must be instituted promptly and universally.

We must also consider those parts of the world where exploding nationalism is combined with the population explosion. There seems too little hope that reason will rule in these places when peasant peoples try to create new states and industrial societies in almost the same instant. Here again caution should be exercised and the pace of industrialization geared to the competencies of the peoples and the physical capacities of their lands to make the transition from underdeveloped area to industrialized community.

Combined with other human needs for the 1965-1970 era are the tremendous needs for education in all its aspects. We speak of education, of course, in the broadest sense. It, more than almost anything else save air, water, and land, will be in short supply in the future. For only through education at every level and on increasingly demanding terms can mankind hope to keep itself from committing universal suicide. But we do not mean mass education, if by that is understood a common denominator of literacy for all and wisdom for none. The goal of universal literacy should be before us, and it will be increasingly nearer as we move into the 1970s. However, widespread ability to read and write will be of little avail unless there are materials worth reading and discriminating readers for whom to write. This whole subject of education calls for far more thorough treatment than we have been able to accord it. We need to examine more closely the competition for men's minds that is touched upon in several studies of this project.* Important as it is to look at the conflict between the US and the USSR in terms of the educational habits and attitudes of the people of each of these great powers, it is equally necessary to try to see what needs to be taught and learned in the future.

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*See C. G. McClintock, RM 58TMP-57, A. B. Nadel, RM 58TMP-59, etc.

This is doubly true when one considers the influence that will be brought to bear on the future course of international dealings by the capacity of peoples to understand and to evaluate the information they are given by all the media of communication available to governments and peoples in a rapidly contracting world.* "Education for living" may be an unfashionable phrase just now, but it will be an essential of the decade to come. In our view it will have to prepare the man of tomorrow for his role in the new age with a discipline and a purpose that may be lacking today. It is clear that more and better technological education will be required. But we see a need for education for leadership as more important. This implies education of a sort all too rare today -- even in the half dozen countries where the standards are highest. If Sputnik had done nothing else, it would have been important because of the revulsion it caused in the US toward the type of educational myopia under which we have been operating for nearly a quarter of a century. The worldwide competition for the minds of men will not end with the new decade, nor will it result in a clear-cut victory for one side or another. It will continue and become intensified.

We shall need to know before we go on into the 1960s what are the differences between the purposes and goals of education throughout the world and the accomplishments. We can suspect that education in the Communist bloc countries is primarily materialistic in its aim, that the intent is to train technological and political tools that can be manipulated and used at the whim of the totalitarian leaders. We can likewise support that the purpose of universal education in the countries of the Free World is to raise the level of all the peoples and to equip individuals to play significant roles in the development of their own destinies. But we shall be blind if we allow ourselves to succumb to unfounded emotional needs of the future. We must not guess; we must know.

The stultifying effects of enforced and voluntary conformity are having their toll on the vitality of the human race. It appears to us that the population pressures of the next decade will result in localized revolts by the "common man" against the constraints of his environment. In fact, where such revolts are most vigorous -- as they may be in the underdeveloped areas of the world -- we may see before 1970, and almost certainly before the year 2000, events as significant as the American and French revolutions of the 18th century, the mid-European upsets of the 19th century, and the Communist developments from 1917 to the present day.

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* A. B. Nadel, RM 58TMP-59, devotes attention to this factor.

We conclude this section of the report by saying that in a world of 3.5 billion people, the individual may not seem to bulk large. Nevertheless, this is in its very essentials the era of the common man and, to put it literally, the addition of just one more person to an already crowded earth figuratively may be all that is needed to upset an uneasy balance of power, the sufficiency of food, the space requirement for housing, the numerical superiority of a military force, or the militant membership of a religious or nationalistic group. We do not exaggerate when we point to the problem of population expansion as the premier concern of the world today and tomorrow. If we are fortunate, that one more individual may be another Einstein, another Lincoln, another Shakespeare, or another Buddha. Unhappily that is just what the world may have been thinking when the recorder registered the birth of Adolf Hitler, Josef Stalin, Torquemada, Pontius Pilate, or even Beelzebub himself.

It has been one of our purposes in making this study to call attention to the fact that right now is not too soon to face the challenge of the population explosion, so we may prevent irreparable damage from the results of the detonation we have neither the means nor the wisdom to avoid. We can guess the damage an atomic bomb can do. The population explosion is more likely -- in fact, it is certain -- and we are not yet prepared to calculate its cost to the world. The burden of our argument here is that we had better be about the business of organizing a sort of "civil defense" against the probable effects of this inevitable "bomb-shell".

3

THE PHYSICAL FACTORS SHAPING THE FUTURE

In a world of rapidly increasing population, the requirements for scientific and technological advances will grow ever more urgent. We have long been familiar with the assertion that this is the age of science; that, of all the ages of history, this is the era most dependent upon scientific discovery and technological progress. These truisms are nonetheless impressive because they are reiterated. This is the day of science, and tomorrow will be just like today, only more so.

As we move into the coming decade, there will be an even greater emphasis upon the need to marshal our scientific knowledge and our technical competence for the conquest of the physical environment and for the exploration of the further frontiers of the universe around us. This period, in which we already see the importance of the scientific aspects of life, will be but a preface to the era that will see even greater emphasis given to the needs of the human race for scientific knowledge. How great will be the demands upon scientists and for scientists can only be estimated. But we can be certain that they are destined to play more crucial roles for decades to come. The problem, as we see it, is to ascertain the optimum conditions for producing scientists of demonstrable proficiency.* Perhaps we shall find that frantic efforts to produce scientists have a marginal utility -- a crash program may put quantity above quality. But until the proper analyses are made, we are likely to witness a continued proliferation of scientific manpower.

Surely there will be a plenitude of problems on which to work. Here we can merely suggest some that cry for attention as well as some of the results that are likely to be visible in the period we are examining. One of the greatest tests of our claim to maturity as a people -- and in fact as a species of life on this earth -- will be how we apply the knowledge the scientists will produce in the years ahead.

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*C. G. McClintock, RM 58TMP-57, gives some consideration to the need for educating scientists, as well as of the methods employed in both the US and the USSR.

Because the subject is so large and so complex, and because the tasks before our scientists are so great, we are arbitrarily choosing only a few topics to discuss here. Our recognition that scientific research and applications will bulk so massively in the future of the world's progress should give assurance to those who find in such a limited discussion a lack of adequacy.

One of the most pressing needs of the decade ahead will be for greatly increased energy -- in its more familiar forms as used commonly today, and in types of energy that are only beginning to become available, as well as from new sources as yet untapped. We believe that current planning for power production is not likely to satisfy the 1970 demands for approximately 2-1/2 times the present world output. This will of necessity require consideration of sources of energy that should be susceptible of much greater development in the near future. The three sources regarded as most possible in this respect are nuclear power, chemical sources, and solar energy.

We see in these three potential sources of greater energy both advantages and disadvantages. By 1970 nuclear power will attain its greatest usefulness in land-based power stations and for ship propulsion, but in much less measure for other projected uses -- such as in nuclear aircraft. The degree to which we in the United States encourage and support research and development will determine how rapidly we move forward toward a realization of the potentials in this sphere. We are not likely to see, in the framework of the cold war, the sort of emphasis upon a number of the so-called civilian usages of nuclear power that have been voiced in the "atoms for peace" declarations of our governmental leaders. However, regrettable as this may be from a viewpoint of idealism and national prestige, attention to the defense utility of such developments often contributes to purely civilian usages.

Nevertheless, there will be appreciable advances in the nuclear fission generation of power in the decade ahead. The employment of relatively small, semi-mobile, packaged fission reactors for strategic military purposes in isolated areas is already a fact. As costs are reduced, we may expect greater non-military utilization of portable or semi-mobile fission reactors for remote regions. We also foresee that nuclear fission power generation will probably prove itself economically competitive with fossil fuels before 1970 in many areas of the world now dependent

upon imports of such fuels. Large scale production elsewhere at economically acceptable costs will probably be delayed until well beyond 1970.*

As for chemical sources of energy we see them utilized mainly for power generation, transportation, and heating purposes. Advances in the application of known principles and refinements in present practices should produce more efficient use of such sources. There will be increased requirements for discovery and development of new fuels as well as for improved processes for the more efficient use of existing fuels. Especially as we move further into the era of missiles, rockets, and space vehicles the demand for new chemical fuels will spur this search.

The whole field of development of solar energy sources will also become more active in the period we are examining. While solar energy will find only limited application for purposes of heating, we shall witness an accelerated development of this source for many other uses, particularly in the area of space exploration.

On the topic of the direct conversion of various types of energy to electricity it should be sufficient to indicate that we expect an increase in the use of converters in the decade ahead.** The great growth in converter use will lead to higher proportionate development and production of portable electric equipment of all types. Thus, we can forecast increased emphasis upon those devices and mechanisms that provide readily transportable energy sources for the operation of a variety of mobile units under their own power, or where energy is easily available on a small scale to provide power at the spot where it is needed to serve individually crafted or mass-produced instruments alike.

The political and economic overtones of these requirements will have to concern the scientist as well as the statesman and economist. In this and in other areas of the future, the scientist will be called upon more and more to exercise his judgment and contribute his intelligence to the solution of political and economic problems. Therefore, we see here as elsewhere the need for wide-visioned individuals ready to cooperate with men of other training and talents.

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*H.C. Mattraw and J.W. Moyer, RM 58TMP-47, deals in some detail with these aspects of the probable development of nuclear fission power generation.

**See especially H.C. Mattraw and J.W. Moyer, RM 58TMP-47, for a detailed discussion of this point.

Another subject of immediate concern is the demand for global communications that will mark the oncoming decade.* We estimate that this demand will more than double in this period. The resulting congestion in communications media will cause an additional doubling in the amount of traffic to be handled. Compounded upon these factors will be ionospheric and scatter phenomena -- both natural and artificial. This will further double the traffic density. The total effect will amount to an eightfold multiplication in traffic density during the time between now and 1970.

The significance of such a situation must be clear to the planner -- he must count on an order-of-magnitude increase in difficulty in getting his message through from what he is now experiencing.

We have the technological resources for hurdling this communications barrier in the coming decade. But it will require an increase of at least two orders of magnitude in communications planning and facilities.

Happily, we see in probable modulation and detection techniques, emission control, path management, and allocation administration a three hundredfold multiplication in resources for global communications by 1970. Before we can be sure of this estimate, however, we must investigate predictive techniques, artificial scatterers, modulation methods, and other communications and radio services. If our calculations are correct within tolerable limits, we can then project our studies further into the future. What is of paramount concern to us at this point is that we recognize the onrushing complexities of this communications problem and work energetically to make use of existing scientific knowledge as well as to strike boldly into the unknown.

Another specific area of study we have entered is the field of trends in electronics research. Demonstratively this field is one that must of necessity be examined for its significance to TEMPO and for the General Electric Company in particular. Our survey of current electronics research indicates that the future technology in electronics rests chiefly on materials research and upon a greater understanding of the principles and properties of ionized gases. Moreover, we must consider the development of devices that will be operable at the extremes of high and low temperatures.

*J.E.Hacke, RM 58TMP-62, treats in specific terms with the many facets of this problem of communications.

It is our belief that the decade ahead will see the realization of a greater influence on the part of chemical electronic and bio-electronic phenomena. Likewise, local control of the ionosphere may, in all probability, cause a revolution in high frequency communications. This will be especially significant if, as suggested above, advantage can be taken of the technical improvements in communications techniques.*

When we come to consider the salient characteristics of electronics devices and procedures likely to be ready by 1970, we can state with some assurance that this date will usher in a period of ultraminiaturization, portability, and of greater use of segments of the electromagnetic spectrum currently employed. In addition, it will be possible to utilize entire new families of instrumentation at extreme temperature ranges. Part of this development will result from requirements put upon electronics for use in the exploration of space. And, concurrently, such exploration will result in the applications of the principles discovered through this endeavor to other developments in the electronics area.

By 1970 we can expect greater use of computers and information storage devices in the fields of education, finance, commerce, and in administrative procedures of various types. The entire span of electronics possibilities in the computer field will open wider the potentials of this form of automation with all its significance for the social and economic environment of advanced regions of the world. Not only will there be a greater dependence upon electronic devices of this nature, in enterprises involving manufacturing and control, but advances in electronics mechanization will also make an impact on many hitherto laborious manual operations in other sectors of life. And, as a point of particular importance for national defense calculations, an airborne radar with the capability of detecting, identifying, and tracking low-altitude and ground-level military activity can be expected to have been developed by the end of the next decade.**

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*J.E. Hacke, RM 58TMP-62, should be consulted in connection with this topic.

**H.C. Mattraw and J.W. Moyer, RM 58TMP-63, contains information on this and related points.

In the geophysical realm, there has been increased activity and interest in exploring (in all senses of that word) some of the more remote environments such as the polar regions, the ocean depths, outer space, and the planets. It is clear that each of these significant frontiers will receive increasing emphasis in the decade ahead. The impetus given explorations in several of these areas by the IGY will undoubtedly be reflected in efforts to enlarge our knowledge of the potentialities in each of the newer realms. And, for good or ill, the polar regions, the oceans, and outer space have become key areas in the political and economic conflicts that underlie the cold war. That these areas will become more and more crucial as scientific advances tell us more about their properties and resources is an evident factor for long-range planners to take into account.

We are very conscious of the importance of the polar areas and we foresee an acceleration of the present movement of population into the Arctic regions. New knowledge of ways to overcome the problems associated with living and working in formerly forbidding territories will hasten the movement of peoples, trade, and industry into the northern regions. Arctic routes for shipping promise to develop rapidly enough to permit access to many portions of the polar and subpolar terrain now closed to surface vessels. The recent examples of submarine navigation of polar seas shows that development of this means of transportation will likely receive increased attention in the future.*

The utilization of Arctic air routes is already a commonplace, and both in commercial and military aeronautics the conquest of the polar regions will lead to a much greater employment of these areas for refueling and service stops, bases, weather stations, communications relay points, and defense outposts. By 1970 we foresee the Arctic as a portion of the globe increasingly familiar to the leading military and commercial powers of the Northern hemisphere.

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*F. E. Bronner, RM 58TMP-61, has a very full discussion of the known and expected significance of the polar regions.

As for Antarctica, the time is more distant when the South polar regions may experience the influx of peoples and the multiplication of transport routes which we foresee for the opposite end of the globe. However, we must not lose sight of the fact that important targets in Australia, South America, and South Africa are within missile range from Antarctica. If present indications prevail, the decade ahead will see intensified exploration of Antarctica for useful resources of a mineral nature. And the possibility that deposits of extractable minerals will be found there indicates that the 1965-1970 period will witness an accelerated interest on the part of nations capable of developing and exploiting mineral resources in an adverse environment.

In general terms, we are only beginning to appreciate the significance of the world's water areas to the future of science, of commerce, of defense, and of life itself. The advances promise to be spectacular in the years to come. In more than one sense, we have scarcely gone below the surface of the seas, and have merely commenced to plumb the depths.*

The discoveries and developments of the past two decades have put the seas to work for mankind in ways that greatly increase their utility over the days when they were mainly a source of fish for food, of whales for oil, and as highways for trade and warfare. Now we are recognizing some of the properties of the oceans as aids to military operations, communcations, and economic resources beyond the familiar potentialities of the era before World War II. In the 1965-1970 period we foresee a much greater appreciation of the new knowledge we are gaining about the oceans. And we shall come closer to the day when seawater can be converted in an economically feasible manner to supplement the increased demands upon fresh water resources for industrial, agricultural, and purely human requirements in a more crowded world.

All we have said merely serves as an indicator of how small our knowledge is, comparatively, of the role of the oceans in our world environment. The stringency of our need to know more will operate to intensify our activity on this score. And, concurrently, we may expect the other great powers of the world, as well as some smaller nations peculiarly dependent upon the oceans for life and livelihood, to move in the same direction and with equally motivated urgency.

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*Reference is made to F.E. Bronner, RM 58TMP-60, where some of these factors are discussed in detail.

4

INTERNATIONAL ECONOMIC COMPETITION AND CONFLICT

It does not seem an exaggeration to say that the cold war of the coming decade in large measure will be an economic competition. While it will continue to be a war for the minds of individuals, it will also take the form of intensified economic rivalry between the major adversaries. And even the uncommitted nations will use economic weapons to maintain their neutral status, or to avoid entanglement with either or both sides in the struggle. This continuing conflict will be more than the old-style imperialistic grab for raw materials and overseas markets. In fact, in aims, strategies, and tactics it will be just short of total global war itself in its severity and magnitude.

This condition would apply even if the United States were not directly involved. However, with the international envy of the richness of the United States as a goad, the Soviet Union has recently sent forth a challenge in unmistakable terms -- Khruschev has declared that the USSR will outstrip the United States economically before the end of the decade, and, parenthetically, will do it without resort to Soviet armed might. There are other nations in the world that, while they might not fancy having the Russians as the economic leaders of the future, would not be overly sorry to see the United States weakened economically through a long and costly competition with the USSR.

The comparison in probable growth between the two chief adversaries in this economic cold war -- the United States and the Soviet Union -- is our primary concern. We visualize that the Soviet economy will continue to grow at a rate approximately twice that of our own.* Implicit in this

*D.J. Hekhuis, in both RM 58TMP-55 and RM 58TMP-1 (1958 Re-issue), deals at some length with the competition and contrasts between the economies of the US and the USSR.

expected growth rate of the Soviet economy is the effect this will have upon underdeveloped countries in terms of the impact of Communist propaganda. While the economic facts of life indicate that the advancing Soviet economy will not overtake that of the United States by 1970, many peoples of the world will be impressed by the evidence that the Soviet economy will be growing at a faster rate than that of the Western democracies. Therefore, they may conclude that victory inevitably will rest with the Soviets in this economic race and that this will be a demonstration of the superiority of the Communist system. The Russian propagandists can be depended upon to foster this belief, as well as capitalize on any indications of Soviet gains.

The Soviets will become increasingly a more significant figure in world trade, challenging us both in the market place and in the minds of men. Here again we refer to the totality of this competition, since we see the Soviet effort not only as a reflection of the internal drive of Russia to hoist itself up by its bootstraps, but also as a manifestation of the threat of international communism against the power of the world's leading democratic stronghold. One salutary note can be seen here. So long as the Russian leaders believe they will be able to achieve these twin aspirations they are not likely to resort to total war, or to become involved in more than small scale indirect armed conflict with the Western powers.

Another significant instance of economic competition will be evident in the pitting of the economies of India and of Red China one against the other in the years to come. Both economies are growing at what are prodigious rates for these hitherto "backward" nations. In relative terms the current economic growth of mainland China is about double that of the Indian rate. There seems little likelihood that India will appreciably reduce this margin in the period before 1970. But, in the cases of both of these nations, the absolute growth rates are impressive. This adds significance to the expected competition between their respective economies.* There is more

*Several studies in this series give detailed attention to the economies of these two Asian nations. See W. C. Neale, RM 58TMP-49, and M. R. Goodall, RM 58TMP-39, on India; and L. Krader, RM 58TMP-56, and F. Michael, RM 58TMP-42, on Communist China.

in this rivalry than strictly economic aspects. There is an ideological undertone as well. Communist China is in a sense a model of the Soviet type of economic advance -- the rapid industrialization of a huge and potentially resourceful land where all is subordinated to the direction of every facet of individual and community life from a single source and for a single purpose. India, on the other hand, represents a start from somewhat similar base lines, but with a different spirit of direction and of purpose. There the design is a socialistic economy, with areas of free enterprise within the planning sphere to take into account the aspirations of a people for self-rule and for individual appreciation of the role of an economic pattern as a servant of the population rather than as its master.

While we must not overestimate the propaganda value of these two models in their impact upon the underdeveloped areas of the world -- especially in Southeast Asia and Africa -- we necessarily should call attention to the fact that much of the "colored" areas of the globe will be watching intently in the years to come to see the results of these two experiments. And we cannot ignore the fact that in both India and Red China the significance of this outside attention to the respective actions of these two great powers does not escape the economic and political leaders who are basing their plans on these contesting concepts.

Combined with this importance of the competition between India and China is the realization on the part of both the Communist and the non-Communist world that we in the United States have, to a degree, become committed to aid the Indian economy. This assistance can have great significance, especially for the private sector of the Indian economy. As several writers point out, India is at a period in the development of its economy where such outside aid can exert a potent influence upon the expansion of heavy industry in areas where internal governmental programs cannot take on the task in sufficient degree to insure continued growth.* With aid from the United States, the recent drains on Indian foreign exchange reserves can be offset to some extent and the momentum that has been threatening to lose much of its vitality can be preserved.

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*See especially W.C. Neale, RM 58TMP-49, pp.26-27; and M.F.Millikan and W. W. Rostow, "Foreign Aid: Next Phase," Foreign Affairs, XXXVI:429, April 1958.

It appears evident that, in order to utilize the potentials of the Indian economy for a growth that will increase the likelihood of India's chances of meeting the competitive challenge successfully, the United States will do well to increase its economic aid to this area of South Asia. Whereas we know that this aid represents no semblance of imperialism on our part, we shall be constrained to demonstrate forcefully to the doubting and the suspicious that aid to India is just that, and it is in no way a levy upon India for favors and subservience in political, military, or ideological fashion.

The important consideration for the future is that however Indian economy grows -- and our aid is only a part of the sum that will foster that growth -- the increase in India's economic standing must be achieved on terms satisfactory to the Indians themselves. No one will be blind to the assistance Red China has had from the USSR. The comparison between the achievements of India and those of China will be viewed as a part of this continuing competition in economic warfare between the United States and the Soviet Union.

Another nation of Asia whose economic growth and stability will necessarily concern us in the coming decade is Japan. The heavy dependence of Japan upon foreign trade will influence her political future as well as her economic well being.* As mainland China becomes further industrialized, Japan will find itself in closer competition with the Chinese Communists for markets in South and Southeast Asia. For a time the two competitors may be able to share the wealth, since Japan is and will remain substantially ahead of her continental rival and the Chinese will not be in a position to produce the variety of manufactured goods with which Japan can hold its present customers. But, before the decade is out, we shall likely see this balance shifting and Red China becoming a real threat to the Japanese international position in economic terms.

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*M. Bronfenbrenner, RM 58TMP-44, deals with the significance of foreign trade for the Japanese economy. See also R.E. Ward, RM 58TMP-41 for political implications of this subject.

While this competition is growing in intensity, a concurrent problem will face Japan. A great deal of Japan's commercial stability depends upon the possibility of trade with mainland China. So long as political impediments of any type stand in the way of full realization by Japan of the potentials of the Chinese market, we are likely to see tensions in this area. These political impediments can come from within either or both of these two countries, or they can come from the outside. In the latter case they may have the effect of drawing Red China and Japan closer together economically and politically so that the combined -- or associated -- strength of the sophisticated and highly industrialized Japan and the growingly advanced civilization of mainland China would act to form an Asian power center of concern not only to the free nations of the Western world, but to the Soviet bloc as well.

We must also consider the growing foreign aid program which the Communist Chinese are undertaking. Their efforts to institute projects in support of technical and agricultural assistance to the underdeveloped areas of Southeast Asia are already bearing fruit. Moreover, for political reasons, the Red Chinese leaders will find it quite feasible to divert resources from domestic projects to foreign aid programs without reckoning precisely the cost of details in the over-all objective of subverting neighboring nations or of winning propaganda wars.

If Red China extends her economic program into substantial grants of aid -- either in the form of funds or material goods and technical help -- to areas of the Asian and African sphere in the next decade, we may see several results. There may be a split between the USSR and Chinese Reds on this issue. At the same time the United States, the Soviet Union, Red China, India, and Japan may enter into a race to see which nation can woo the underdeveloped countries with promises of aid. And we may have these hitherto "underprivileged" countries playing one big power against another, or against several others, on a scale that resembles blackmail. One speculation is that Red Chinese assistance to foreign areas will be more for propaganda purposes than as a real demonstration of China's ability to enter into competition with the USSR and the US in these matters.

In the decade ahead we do not see the emergence of Africa as an economic unit of major consequence in world affairs. Certain countries and possibly limited areas of that continent will show rapid growth as technology and improved agricultural methods are spread into the former colonial areas and in such portions of Africa as remain under the guidance of France,

Britain, and Belgium. Certainly, the economic future of Africa is impressive in its implications, but the greatest promise is still in the future, and that future lies beyond 1965-1970.

Something the same might be said of Latin America, but with greater caution, for a number of nations south of the Rio Grande are closer to the threshold of significant economic development than are the newer countries of Africa. It would appear that certain countries of Latin America can be looked upon as most likely to develop rapidly in an economic sense in the period under consideration. The population explosion already referred to shows an expectation of a rise of the number of inhabitants of Latin America in the next decade on a ratio considerably in excess of the increase predicted for the United States. This will mean much in terms of the growth of industrialization in Latin America and much in terms of the role Latin America will play in the world economic scene.

Another area calling for attention is the Middle East. Here the "economy of petroleum" has made the region a tension point for several decades. And, both politically and economically, the Middle East is destined to remain a trouble spot for years to come.* The fact that oil resources are being exploited in currently less controversial regions -- such as the French Sahara, the Argentine, Alaska, etc. -- does not remove the Middle East from the list of potential centers of competition. But new developments do indicate that the nations of the Middle East are not likely to use their possession of oil resources as a weapon of economic warfare. Middle Eastern nationalism is becoming more and more imbued with the determination to embark upon large-scale developmental programs. To do this, they will have to depend upon the sale of their oil to Western Europe -- presently their logical customer. So, we believe, that the emphasis on the competition over the Middle Eastern region will shift from the economic sphere to the political one, although the changes will be slow and the current one-product economy of the region will continue to keep the Middle East

*See H.P. Goss, RM 58TMP-4 (Revised Edition), for a discussion of the factor of Middle East oil in international political and economic competition.

"underdeveloped" until advances in some such technique as low-cost desalinization of seawater permits a diversification of the area's economy.

The economy and the growth potential of Europe -- especially Western Europe -- is a subject for future investigation. When we stop to consider that Western Europe was the center of modern economic development and for many years represented the world's most advanced society, economically speaking, we realize how important it is that TEMPO devote considerable attention to European economies in its future environmental studies. The development of such cooperative enterprises as the European Coal and Steel Community, the European Common Market, and similar joint undertakings will have a definite impact upon both European and world economic progress in the decade ahead. The very recent monetary reforms in several countries of Western Europe, beginning with France and extending to much of the industrial and commercial area of this significant region, are an indication of the determination of Europeans to regain some of the stability and the economic leadership that have been lost since the days of World War I. We can see in this new spirit of unity clear implications for the future, not only in terms of international economic competition, but also in portents for European political unity.

We must take increasing cognizance of the overriding significance of the possible future course of our own economy -- both in domestic and in international terms. As a matter of fact, in an economy such as has developed in the United States during the last half century it is both difficult and unwise to compartment the over-all design into domestic and international segments. As a nation we have become so involved in world affairs that practically everything we do or plan economically has an aspect of interrelation. While this intermixture could be carried too far, we believe that, in the decade to come, there will be very few facets of our national economy that will not be affected by this international economic competition and conflict we have indicated is a manifestation of the cold war.

We have separated our present discussion of the American economy into probabilities in the area of expenditures for defense purposes and for goods and services that will be purchased by all levels of government in this country for what we consider are non-defense purposes. We have left untouched the immense problem of non-governmental expenditures for two

main reasons. First, a great proportion of the business of the national government in 1965-1970 will continue to be in the defense or national security area -- probably in terms of 50 percent or more of our annual federal budget. Secondly, whatever is to be estimated, appropriated, and spent out of the national income for defense requirements must take into account the other needs of all levels of government and the demands that our society -- acting through political pressures -- will put upon government to include such goods and services in what is made available to the populace as a whole. Of course, governmental expenditures -- for defense and non-defense -- must come out of government revenues. And these revenues must be predicated upon the ability of the economy to sustain them in the first place, and upon the willingness of the taxpayers to accept, politically, the tax bills that are presented to them for payment.

There is in a democratically-based society a close relation between what is done governmentally and what is done privately to plan and carry out the economic destiny of a nation. An investigation into the levels of defense and non-defense governmental spending that are likely to be possible in the 1965-1970 period leads us to some general conclusions about the ability of the American economy to sustain a high-figure demand to meet the challenges of the cold war. Projections of existing capabilities indicate that the United States can carry heavy governmentally-supported burdens in both the defense and non-defense fields, without endangering the economic health of the nation. An expected GNP of $700,000,000,000 (in terms of 1957 prices) by 1970 could permit a defense budget of something like $65 billions and, at the same time, could permit all sectors of the national, state, and local governments to meet demands for goods and services at levels upward of $80 billions.*

These elements of our economy can be geared to the necessities of the future without dislocation of our economic structure. Enough evidence exists to make a good case for a continued high level of defense expenditure, while the governmental units of our nation increase the services they perform for the citizens of the United States. This is not to forecast a

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*These over all figures are arrived at from a consideration of W.J.Mead, RM 58TMP-45, and D.J. Hekhuis, RM 58TMP-1, plus some further estimates made by Hekhuis in his RM 58TMP-55. See also D.H. Webster, RM 58TMP-46, for substantiating information on non-defense needs.

socialistic or welfare-type of state in any sense, since we are certain that the greater expenditures for national security and individual well-being will be accompanied by a surge of economic growth in terms of private enterprise that will run parallel with this increment in governmental expenditures. Until we can study more deeply the potentialities of non-governmental activity we cannot say categorically what this parallel development will look like. But we suggest that an increase in the GNP from its present annual rate of around $445 billions to the estimate of nearly $700 billions in 1970 indicates a comfortable margin for the operation of private enterprise without fear of its being overwhelmed by governmental spending.*

Naturally, with an expanded population and with increased governmental commitments -- especially on the local and state levels -- there will be some augmentation of what government is doing today in the way of undertaking to supply the needs of the people. In spite of dire warnings, the United States is not likely to enter the 1970s as a socialist democracy, any more than it is apt to turn to an oligarchic rule based on the aspirations of a day long past.

The greatest danger to our economy comes not from this expectation of much greater governmental expenditures. Rather we shall experience in the future what we have so often seen during several periods in our history. This is the alternation of efforts of high resolve and great purpose with times of indolence and niggardliness where the spending of money for governmental needs is involved -- whether those needs are the direct costs of national security in terms of missiles, planes, bases, and ships, or whether they are the less evident contributions to our national strength in the form of schools, roads, health, foreign aid, and the physical and human resources necessary to make these items useful to the people who pay for them.

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*Some further considerations of the implication of this factor are found in A.B. Nadel, RM 58TMP-51, as well as by implication in portions of his RM 58TMP-59.

In this era of international rivalry we are competing with our chief adversaries on a fundamentally unequal basis. The Communist system holds a far different attitude on resource priorities than does our own. This is of greater moment than the familiar "guns vs. butter" equation, although there are aspects of this present as well. We need to examine further what should be the basis of our own priority considerations. This becomes more than a problem of stock-piling, allocations of materials, apportionment of defense contracts, etc. It goes to the questions of what we as citizens of a free democracy want our nation to be. However, before we can determine fully the goals toward which our economy should be directed, we shall need in the decade ahead to survey the extent of our basic resources and decide to what ends we want to direct their utilization.

So often in the cold war, and in other days as well, we have responded to stimuli from an adversary and for a time gone all out to provide the funds needed to build up our strength. Then, as soon as the direct effects of that stimulus have worn off, we have cried for economic relief, for cuts in taxes, for removel of restraints, for services without cost to us, and for budget balancing without regard to what is really important in order to bring outgo more in keeping with income.* This we shall likely do again in the decade ahead. Herein lies the great danger, for as the cold war situation has demonstrated -- where we have reacted to outside stimuli the cost to us has been high and our reaction has been inefficient and wasteful of our resources. On the other hand, where we have pursued a realistic course, buttressed by planning, we have accomplished much and the cost has been relatively less.

One of the first steps in the process of striking an equilibrium should be to examine the values of long-range planning. While the need for such planning is becoming more often recognized with respect to industrial operations, there is still much that could be directed toward the requirements for federal budgetary reforms along this line. We need not imitate the methods or the plans of our adversaries, but we do need to understand that the short-range view we take in national governmental expenditure

*See D.J. Hekhuis, RM 58TMP-55 for a discussion of the economic and budgetary determinants of defense spending during the period since World War II.

processes is most costly in the momentum we lose each year as budget making time occurs. To the extent that we can cultivate a long-range perspective in fiscal matters we shall help to insure the perpetuation of the values we cherish. In a cold war competition, where we face determined opponents who pride themselves on their ability to plan for the far future, it would seem axiomatic that we develop long-range strategies and goals of our own. Not to do so, in our opinion, would be an admission that our nation lacks the capability to lead.

5

POLITICAL ALIGNMENTS AND THE COLD WAR

When it comes to forecasting the possible and probable political developments of a period so far in the future as five to ten years, the prognosticator undertakes his most hazardous task. To venture a prediction as to what nations and peoples will do politically lays his reputation wide open for anyone to destroy. Partly this is because everyone is his own political forecaster and everyone is an expert in this area, and partly it is because the political behavior of nations and peoples defies reduction to figures, formulae, and even good common sense.

The world society of the future appears to us as one in which the manipulation of political power, whether on a local, a national, or an international level, will have to be accomplished more in consonance with requirements for the totality of man's development than often has been the case in the past. Herein lies one great value of inter-disciplinary projects of this type -- each discipline has something to teach another and all may both learn from and contribute to the planner's experience and knowledge. But at the outset of this section of the report, let us reach the conclusion that the energy behind the employment of political force has never been tapped for its greatest usefulness for long enough to perform what should be its proper function.

The cardinal feature of the political climate of the next decade, as we see it, will be the increasing use by nations of psychological and economic approaches to the political accomplishment of their desired ends. These devices have always, in their way, been a part of the stock in trade of the political leader. Sometimes he has used them instinctively and without realizing his dependence upon them. At other times astute political leaders knew they were taking advantage of the interrelations of these aspects of mankind's efforts to arrive at a way of life. But we shall see an intensification of their use in a conscious fashion in the years to come.

Our view of the future indicates that the cold war will continue much as it has for the past dozen years. The principal alignment of political forces on an international scale will be much as it is today in general, although there may be a number of changes in detail. How far apart or how much

closer together the two great power blocs of 1958 will be poses some problems. We would venture to estimate that there is not much in the present scene that would enable us to forecast more than a moderate easing of the tensions that have characterized the decade since the Marshall Plan and the subjugation of Czechoslovakia. In fact, it would be more accurate to see in the future a repetition of the past -- with the United States and Soviet Russia as the leaders of their respective blocs alternating between intransigence and cautious dealings with one another. And, following more or less in the lead of these two colossi, there will be a host of nations on either side pulling and straining in the manner of members of a tug-of-war team. Finally, on the side lines we can expect the customary collection of spectators, now shouting in favor of whichever group seems to be gaining the advantage, now appearing disinterested in the whole spectacle and, possibly, quarreling among themselves over trifles. And the entire contest will be proceeding without umpire, without much in the way of rules, and with no clearcut victory for anyone.

On the international scene, the United States will continue to build much influence by virtue of its great wealth, its military strength, and its moral standards -- even if these latter attributes of power are not always clearly apparent and adequately demonstrated. But we do see some political changes within the United States that may have an impact upon our standing as a world leader. Among these changes, most will be domestic in character -- such as have already been discussed in touching upon the greater urbanization, the increase in mobility and composition of the labor force, the further dependence of the aged upon social security and other welfare resources, and the problems connected with schooling, housing, transportation, etc. A few other possible changes in our political system also will seem to be purely domestic in nature, but will have implications for our international position. These are likely to be some method of the direct election of the President, limitations upon the practice of the filibuster in the Senate, a lessening of the power of seniority to hamper action on legislation in Congress, a more realistic reapportionment of Congressional and State Legislature representation to reflect population shifts, improvements in the budget process, and administrative reforms in various departments of the federal government.* The reason these changes may have some effect upon

* Some of these possibilities are discussed in C. R. Nixon, RM 58TMP-38; D. H. Webster, RM 58TMP-46; H. P. Goss, RM 58TMP-35; etc.

our conduct in international affairs is that they will free the policy-makers from some of the unpredictable and often arbitrary restraints upon their ability to act with continuity and direction.

Among the changes we are likely to experience in the decade ahead, several seem to us to be portentous. We may take it for granted that the United States has come to realize the interdependence of the nations of the world, one upon another. It is true that in an era of cold war we shall be tempted to draw back into our own homeland, but the temptation will not result in action, although there may be a generation of a good amount of talk. Much pressure may be brought by conservative and reactionary groups upon Congress, the President, and upon other segments of our political society, but we do not see on the horizon any indication that the United States will abdicate its role as leader of the Free World, or will adopt some of the policies of isolation that weakened the nation in the 1920s.

Likewise, we can expect a continuing and considerable commitment to the principles of foreign aid -- both through assistance to our allies and through programs of financial, technical, and other forms of subvention to under-developed areas of the globe. Again, vociferous and sometimes influential groups and individuals may effectively limit or halt particular programs, but the principle and the practice will prevail. A great deal of political ingenuity and wise leadership will be required to promote and administer foreign aid during the continuing cold war.* It is our estimate that some of this leadership will be available from among the members of the industrial community where experience with and understanding of large scale, long-range planning can be found. More and more the interrelation of political and business judgment will become apparent in this area of our national life. This change in climate has been taking place gradually over the past decade and we see it having a growing influence in the future.

Concurrent with these developments we foresee a slow, but certain improvement in the quality as well as in the intent of our policies relating to American representation abroad. This will come about partially as a result of the intensified competition between our way of life and the Communist style of rule. However it will occur also because of the evolutionary process that is taking place in the United States today. As a people we are more keenly aware of the need for extending our ingenuity in the trades and professions beyond our purely domestic requirements. The way will not be easy, but we have the belief that the criticism and the obvious short-comings of our existing system will begin to make themselves felt within the next

*Some of the political problems of aid programs are discussed in H. P. Goss, RM 58TMP-40. See also the same author's RM 58TMP-37 and RM 58TMP-35.

decade. How cheeful we may be about this factor of our international political situation will depend upon a number of intangibles. But we can see cause for optimism here and would submit as evidence the analysis of the distance we have traveled in this respect from the days of "Dollar Diplomacy" and the propaganda machinery of World War I to the examples of the Marshall Plan, Point Four, and the concept of the USIA. Set-backs will occur, but the direction seems forward and we can hope for measurable improvements now that the American nation has begun to recognize that competence at home may easily be diluted by lack of purpose and expertness abroad.*

We would suggest that the military elements of international competition -- significant as they are -- have received too much attention. We may have neglected more productive means to accomplish political goals. This is not to say that preparedness is unnecessary or that military strength has not been worth its cost to the peoples of the Free World in its deterrent value. Probably the Soviet Union would have made satellites out of more of Central and Western Europe had not NATO stood in the way with its military shield.

We shall see in the next decade increased political pressures being brought upon areas of the world where we have friends, as well as upon so-called neutral nations. We cannot resist these political pressures by purely military means without endangering the whole fabric of alliances and even world peace itself. We shall also be called upon to institute programs that forestall these pressures before they assume proportions that demand military action on our part or on the part of some one or more of our allies. The examples of the Suez affair of 1956 and the crisis in Iraq in 1958 should be fresh enough in mind to suggest that we might have been better prepared politically so that we (or our friends) did not have to act militarily at great risk to our prestige and in peril of unlimited war.**

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*These points are examined more fully in H. P. Goss, RM 58TMP-35; and A. B. Nadel, RM 58TMP-59.

**That the military success in Lebanon came off so well and did probably deter the Communists from overt action does not alter the fact that we risked much because of lack of general political preparation in the Middle East over a period of years.

How we are to achieve and hold the initiative politically in the future is a subject to which all serious attention should be devoted. There are means at hand in the form of a strengthening of the realistic bonds of our alliance system; of appealing to the minds and hearts of the peoples of the uncommitted nations rather than to their pocketbooks; of harnessing the enthusiasm and vigor of expanding nationalism for the good of the former colonial subjects as well as for the preservation of the values they already hold; of enlisting the support of the forces of freedom that still exist in satellite countries; and of so living our own assertions of democracy that our deeds and our words are not contradictory in the eyes of the world. All these we can set as goals for our international policies, and we must make progress toward these aims in the decade ahead.*

When we come to a consideration of how we might accomplish such a program and what effect its realization might have upon our chief adversary, we see as a basic fact of this cold war the oft-stated determination of the Communists to master the world. Even the Soviets are not likely to believe that mastery will be achieved by 1970. But, certainly, they intend to be well on their way to their announced goal by that date.

Looking ahead, it appears to us that here is our greatest challenge. We of the United States, and we of the Free World must undertake to demonstrate clearly the place that our system creates for the individual man. Politically this has great implications for the planner. He must calculate that, in order to formulate his plans, he has to take into account this atmosphere of undirected freedom of choice. In a totalitarian government planning has its place, but its delimitations are much more clearly marked than in the free society. The planner in a dictatorship may not be free to suggest alternatives, but he is likely to find his planning task more simple so long as he matches his plans to what his superiors want and is able to side-step nimbly when his leader or his plan is changed.

We would suggest that this difference is bound to grow greater between the totalitarian state and the free society. And, perhaps, it will grow more quickly within the framework of the non-Communist world than behind the Iron Curtain. We think we see the beginning of the end of close associations

*Some more specific suggestions on these topics are contained in H.P. Goss, RM 58TMP-37; RM 58TMP-35; and RM 58TMP-36.

between the United States and non-Communist totalitarian powers that have been erected on the basis of expediency. These terminations will come about for two reasons and from various causes. First, the totalitarian regimes we have bolstered in various quarters of the globe are "old" regimes, not in terms of maturity, but in terms of the ages of the men who lead them. In sight, it seems to us, are the end of the personal rules of such caudillos, jefes, kings, sheiks, sultans, presidents, and premiers as have been preserved in office by support from Washington or from other Free World capitals where American funds and assistance were redirected by "middleman" countries. Very few totalitarian regimes long survive the demise of the leaders who inaugurate them. Besides, exploding nationalism is more than likely to bring into being new countries all over the world who want to try "neutralism" for a period, and the influence of the United States will be only one of the influences to which these emerging states are subjected. So, we see a series of readjustments of our own alliance system and a realignment of the world's peoples that will be markedly different from the grouping that we have currently among the non-Communist powers.

As for the Communist bloc, we cannot forecast where or when signs of aging will first be displayed. We have a suspicion that these signs will appear initially in the USSR itself, but that the coming decade will not witness a breakdown of the totalitarian pattern in the Soviet Union. There may be some deterioration around the periphery -- in Poland, Hungary, East Germany, for example -- and the most dramatic rupture may occur between Communist China and the USSR. But to forecast precisely how and when this break will come would be to indulge in wishful thinking. To our minds, the period 1980-2000 would be a more realistic estimate of the time when the two great Communist nations may part company.

Because the Communist bloc will not remain static, it is very probable that attempts will be made by the Soviet leaders to make up for losses by ventures into other areas. The possible defection of a Hungary or a Poland might be matched by an intensification of Russian activity in the Middle East or in Africa. Tensions between the Moscow and Peiping Communists

might be relieved by directing Soviet ambitions toward Latin America and Chinese attentions toward Indonesia, or Malaya, or Burma.* In short, the Communist bloc has the advantage that we do not possess -- it can shift its emphasis more quickly and can be on its way to new goals while we debate the wisdom of doing business with a dictator or of encouraging the development of democratic institutions in a recently freed nation. And the Soviet moves are more likely to be political and economic in purpose than they are to be military -- although some of their probes may be cloaked in military terms as were the threats to send "volunteers" to Egypt in 1956 and to atom-bomb Western Europe then and on several later occasions. The great danger, as we see it, in the Communist bloc strategy is that Red China may be willing to make its thrusts strongly military, realizing that total war, if it comes, will be less damaging to mainland China than to the Soviet Union, the United States, or to Western Europe.**

For these, and many supplementary reasons the United States will find itself in an ever more involved position as the decade advances. The deterioration in our international position in recent years has been marked by increasingly widespread misunderstanding and misrepresentation of our goals and our methods. We have not been blameless in this development. Moreover, even our most sincere critics often neglect to make allowances for the image of the United States created in foreign minds by Hollywood film extravagancies, ill-bred behavior of individual Americans abroad, and the inevitable gaucheries of a people relatively new to the practices of international politics. Nevertheless, we cannot escape the fact that we have fallen short of our potentiality for leadership by displaying ineptitude in international affairs. To our credit, it must also be said that, on a number of occasions in recent years, our representatives abroad -- both official and quasi-official, have displayed real talent for acting in the best interest of our country. The picture is neither all black nor all white in these matters. All democracies find it difficult at times to reconcile deeds with words, and vice versa. Controls are much more lax than they are in totalitarian systems and friends and foes alike are quite ready to point out discrepancies between announced ideals and the execution of policies.

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*G. J. Pauker, RM 58TMP-34, devotes considerable attention to the threat of Communist expansion in Southeast Asia.

**F. Michael, RM 58TMP-42, discusses this point.

In the coming decade we shall have to move more certainly to spread among the peoples of the world -- our own as well as outsiders -- the knowledge that we really mean what we profess. This will call for a greatly increased effectiveness in our information practices and performances. But a successful propaganda effort will have to be based upon a clearer understanding all along the line of what it is we hope to achieve and of how we propose to reach the goals we have set for ourselves. We hear a great deal about how successful the Communists are in appealing to the underdeveloped areas, in subverting the younger intellectuals, in mesmerizing the masses. Certainly, the vigor and imagination that were responsible for the creation and development of the world's leading democracies have not evaporated through exposure to the heat of Marxian argument. Nor can we believe that only the Communists know the ways to win friends and influence people. As we see it, what will be required of the United States in the decade ahead will be a renewed faith in its own ability to lead, a charting of new directions in which to advance, and a determination to march, not in response to the tunes played by the Communists but in step with the themes by which we have so often made our most inspiring progress.*

During this era of cold war ahead we can see no hope of world disarmament or of real peace. To forecast either of these wished-for conditions would be to let our sentiment rule our judgment. However, we do see in the United Nations an agency for the discussion of means toward the achievement of controlled disarmament and as a vehicle for keeping the peace. As has been indicated in one of the papers in the series supporting this project, the UN will be a greatly enlarged international forum by 1970.** The UN will have nearly 100 members by that time, twice the number it began with in 1945.

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*Some suggestions along these lines will be found in A. B. Nadel, RM 58 TMP-59, and in the several studies in this series written by H.P. Goss.

**See L. Bloomfeld, RM 58TMP-48, for a detailed discussion of what the UN of the future is likely to be in terms of size, function, and effectiveness. Some considerations of controlled disarmament will be found in H. P. Goss, RM 58TMP-36.

To the extent that it will be more representative of the world as a whole, this is encouraging. But a 100-member UN will verge on unwieldiness except in the sense that its debates will reflect in miniature world opinion on questions of great moment. As Henry Cabot Lodge, Jr., said recently, this is a favorable situation for us and our allies. The UN has become so clearly a part of the international political scene that the Communist bloc dares not ignore it and cannot afford to leave it. Yet, every time the Soviets or their satellites impede the functioning of the UN by vetoes, abstentions, or intransigence the rest of the world has a clear display of what nations stand in the way of world peace.

This is not to suggest that the United States should accept without debate -- or without veto or abstention itself -- the weight of numbers when it is against what we believe is our own best interest. But it does indicate to us that in the future we should use the UN and its public forum, as well as its less publicized committees, to further our determination to secure a world in which peace, justice, and sincerity of purpose are possible. We shall have to educate our own people more thoroughly to the potentialities of the international security organization, and we shall have to pursue more vigorously our announced policy of working within the UN for the furtherance of the aims of its Charter -- which, incidentally but not accidentally are similar to our own.

We do not believe that the United Nations as now constituted, or as it will operate in the next decade, can prevent total war. It may help materially to delay such a catastrophe, if the world is slipping into situations that will make such war inevitable. The real role of the UN in respect to keeping the peace will be in cases where limited wars have broken out or are imminent. In the former instance the UN will be of significance in restoring peace and of performing patrol functions as it has in the Sinai penninsula since the Suez crisis in 1956. In the latter case, the UN's function will be all the more important, because the prevention of wars -- even of limited ones -- will serve to build up the forces of peace in the world and will act as a further safeguard against widespread involvement in armed conflict.

Nothing in our researches indicates that the UN of 1965-1970 will achieve the stature that ideally it should possess. By way of encouragement, we do see that the United Nations has accomplished much during the thirteen years of its existence. 1965-1970 will be a further testing time for the

principle of international security through international organization and the expectation is that the UN is now firmly enough established to endure in all but the most disastrous of circumstances -- a total war.

In our concern for the factors which have some roots in the events of the past several years, we may tend to overlook the possibility of a new element in the world political environment. This is the potential emergence of power centers that will rival or, at least, supplement those we have in our midst today. There is a fair likelihood that the 1965-1970 period will witness the creation of one or more combinations of states that will have to be reckoned with in planning for the future. We can state negatively our beliefs on this score with more certainty than we can make our forecasts definite as to where these new power centers will be located. We do not believe they will emerge in Southeast Asia.* Latin America, Africa south of the Sahara,** and Australasia are also unlikely to be the sites of developing strength to that extent. As for the Arab states of the Middle East, the possibility is there, but the lack of economic resources beyond oil and the low levels of health, education, and political experience indicate to us that the 1965-1970 period is much too soon to see in that area a development of the degree necessary to challenge the leadership of either the NATO powers or the Communist bloc.***

May we suggest that one area to watch is India for the reason that in Southern Asia there is both the civilization and the manpower to erect a strong competitive society with something specific to offer in the way of political leadership to other nations of the region, as well as to some of

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*G. J. Pauker's paper, RM 58TMP-34, indicates why Southeast Asia is not apt to develop into a power center in the decade ahead.

**H. P. Goss, RM 58TMP-8 (1958 Revision) deals with the power potential of Africa.

***H. P. Goss, RM 58TMP-4 (Revised Edition), analyses the importance of the Middle East in world politics.

the emergent countries of Africa, where there are considerable populations of East Indian ancestry. Under the guidance of India there might develop a political philosophy that could unite a number of these countries.* Such a union would require much adjustment on the part of some of its adherents, but these adjustments would be easier to make than those necessary to join them to Western power alliances or to Communist pacts.

A less likely power center might be found in the Far East through a combination of Japanese and Red Chinese components for economic reasons. This does not seem possible by 1970. But we must admit that Communist China is the real political enigma of our time, and a break between Peiping and Moscow might bring a realignment of the Far Eastern nations with Japan and Red China including Malaya, Burma, Indonesia, both sections of Indo-China, and North Korea in a new Greater East Asia Co-prosperity sphere.**

We shall have to await developments growing out of the recent events in France to judge whether they portend a renaissance of that nation as the nucleus of a power center. The combination of a resurgent France and her associated overseas territories might well create a strong bloc with economic and political unity whose influence would be felt in many ways. But the French will have to resolve the problems of Algeria and Tunisia, as well as those inherent in French relations with Morocco, before much progress can be made toward rekindling the light that France held before the world in the days of its cultural and political eminence. This is an area of significance to watch, and to examine in detail in future programs.

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*M. R. Goodall, RM 58TMP-39, and W. C. Neale, RM 58TMP-49, discuss the possible emergence of India as a power center from the political and economic viewpoints, respectively.

**Compare the studies by F. Michael, RM 58TMP-42; R. E. Ward, RM 58TMP-41; M. Bronfenbrenner, RM 58TMP-44; L. Krader, RM 58-TMP-56; and G. J. Pauker, RM 58TMP-34, on the possibilities of East Asian developments. The positions of Thailand and South Korea, should such a combination occur, would be especially perilous .

Likewise, we should give future attention to the Commonwealth of Nations, and especially to those vigorously democratic elements of it promising stability -- Canada, Australia, New Zealand, as well as the aging but still influential United Kingdom. The Commonwealth may lose India, South Africa, Pakistan, and several of its newer members in Africa. But the health of the core nations that make up this loosely-linked union may be improved thereby. And there is a possibility that the 1965-1970 period may see a reoriented power group of English-speaking democracies.

With the likelihood of this emergence of one or more new power centers in the world, both the USSR and the United States would find their tasks of political leadership complicated. Soviet Russia would find it more difficult to achieve its ambition of world domination if there was a strong power group, gathered around India, standing in its way of penetration into Southeast Asia and Africa. The United States would find its responsibilities and tasks increased, since it would have to rely more on example and persuasion than on wealth and generosity. And the world might see a greater reliance upon negotiation than upon threats,boasts, and bluffs. In other words, there may be ahead some decades wherein a rather delicate balance of power will exist in international politics. The arbiter of the world's destinies may be neither the Soviet-directed Communist bloc nor the American-led Free World alliance, but a new great power combination brought into being by an ideal and an imaginative recognition of the principle of standing clear of association with either the Communists or the Free World in the continuing cold war.

6

UNITED STATES NATIONAL SECURITY REQUIREMENTS

When we consider that the period of 1965-1970, as we foresee it, will at once be an era of no real peace and of no total war, we are constrained to assess what will be the likely national security requirements for the United States in such a circumstance. All that has gone before in this survey indicates the gravity of the situations that will face American policymakers and planners in the decade to come. They must be able to strike the proper balance in understanding of and preparation for the needs of national security.

This difficult task is further complicated by the injection into problems of security of two elements that pose tremendous challenges to planners: First, the ever-changing nature of weapon systems -- their components, purposes, effectiveness, and rapid obsolescence; and Secondly, the political commitments and expectations that exist without close relation to the military capabilities to fulfill them.

When we place these elements against the varied circumstances in which nations find themselves at odds with other nations, we realize the series of possible combinations -- some of them calling for no armed conflict, others for all-our war -- as shown on Chart IV.* Our planners may be called upon, in the decade to come, to be ready with programs and weapon systems to fit situations anywhere along this war spectrum.

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*This chart is taken from N. Precoda, RM 57TMP-7 (1958 Revision).

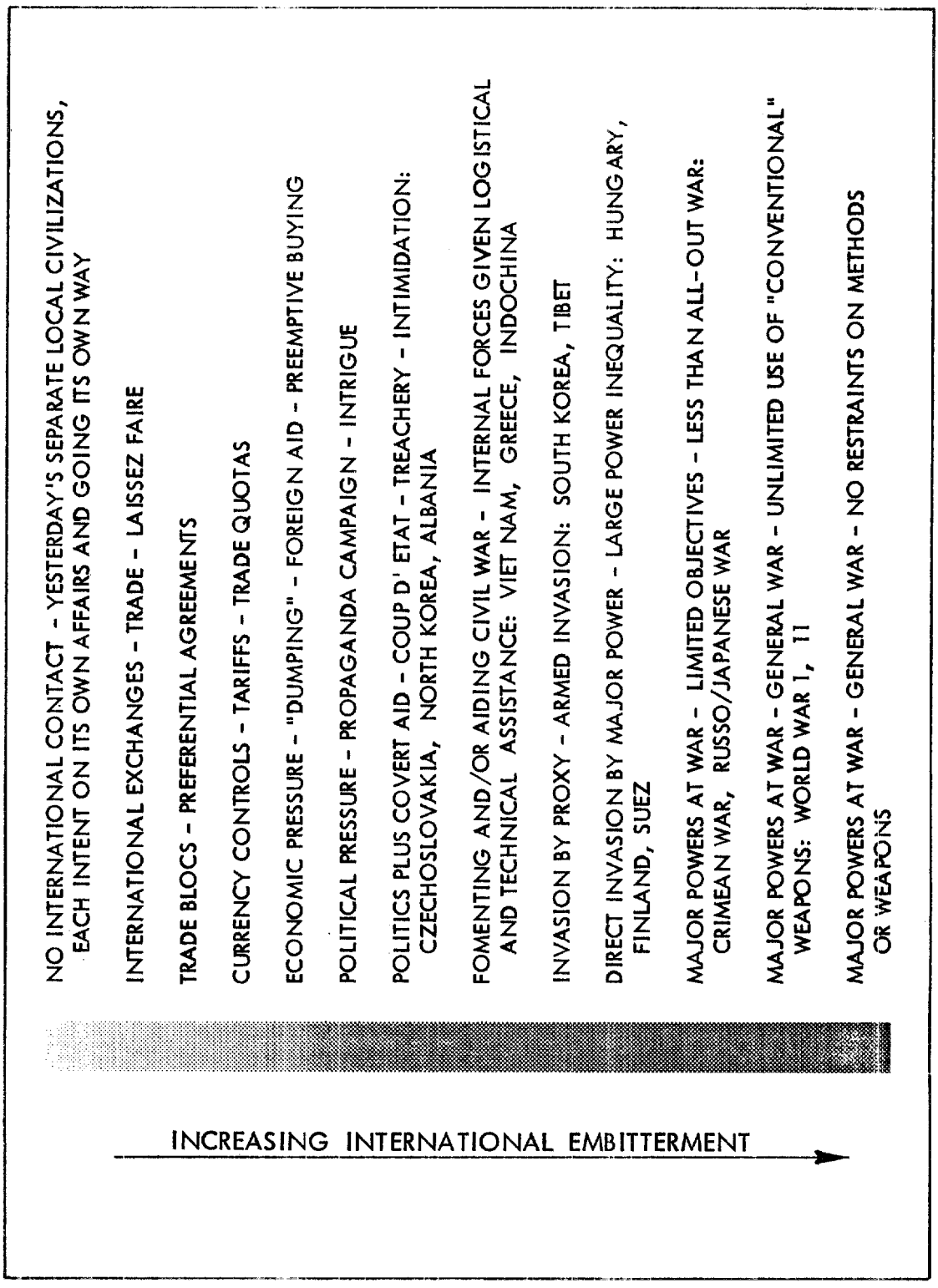

Chart IV. The War Spectrum

If we posit the assumption that within the coming decade our military forces will not be called upon to fight a total, global atomic war against the one adversary able to engage us in such a war, we immediately ask the question, "What type, size, and distribution of military forces do we need for the period ahead?"

To compound the problems of this glimpse into the future, we have only to add the mention of the words "limited war". Shall we, in a paraphrase of George Washington's warning, say: "in time of 'no peace', prepare for total war -- and the limited wars will take care of themselves"? We have already witnessed, in the cases of Korea, Indochina, Suez, and the like, that limited wars do not "take care of themselves". They require special emphasis in terms of forces, objectives, safeguards, and compromises.* Yet, if we were to devote our major attention to preparation for the likelihood of limited wars, we should soon find our strength fragmented and our security menaced because of our inability to meet the threat of total war without adjustments, delays, and reversals. One thing our emergence into the atomic age should have taught us above all else -- when total war threatens, delay means disaster.

This suggests that our national security requirements for the decade ahead will call for planning talents and techniques sufficiently mature to assure us of two principal safeguards:** First, a weapon system of a design and composition that will serve as a continuing shield against the threat of total war -- whether that war seems imminent, remotely probable, eventually inevitable, or highly unlikely;and, Secondly, a companion system of a design and composition that will afford a ready reply to the requirements of limited wars (large, medium, or small) anywhere in the world -- and at the same time, will provide a system that will be instantly adaptable for use in total war, if that occurs.

We would suggest further that this duality of our response to the requirements for national security should not be taken as a program for compartmentation of our defense forces. We see the need for a highly integrated weapon system which has this dualness of purpose we contemplate, but which

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*See N. Precoda, RM 58TMP-32, for some logistic problems related to limited war.

**We leave for future investigation and report the very great problem of our organization for national defense. This area of examination is so extensive that it could be an early requirement for study by TEMPO.

has, also, a diversity of components. Yet, the design and the administration of this weapon system should be such that its flexibility and its adaptability will make it responsive to any imaginable situation likely to occur in the period ahead.

We know the capability of the Strategic Air Command and its preparedness for action. It would seem evident that SAC will remain into the coming decade a leading element of our security posture. As IRBMs and ICBMs phase into the scheme of deterrence and retaliation, SAC's manned bombers will assume a lesser position on the scale of national power. But the spirit of readiness developed so whole-heartedly by SAC commanders and their units must not be allowed to disappear.

The proper distribution of weapon system emphasis during 1965-1970 in SAC, TAC, and the Navy, with attendant supporting systems involving early warning, surveillance, continental defense, and the like will involve a great deal more than the technical state of the art at that time. Economics and politics will enter into the calculations, also. And this is why the planner will have to concern himself not only with the particular weapons on hand, on order, and on the drawing boards, but also with the wise allotment of funds for their procurement and operation.. At the same time -- and here the planner must be practically omniscient -- he will have to know the political reliability of the territories where he has or proposes to put bases, the political climate of his homeland he is planning to defend, and the political future of those portions of the world likely to survive the impact of the first blows of total war.

We foresee an intensification of the responsibilities placed upon the military commander and his civilian superior in standing alert for the possibility of total war, even if no total war is forecast for the decade ahead. In a society that commits suicide by the thousands each month on the highways one would expect a callousness toward the burdens it places upon its military and political leaders. Yet, we shrink from investing these individuals with the power they need to meet these duties.

Here again, the planner will be faced with the necessity to factor into his program the indefiniteness with which we as a nation and a people approach this vital aspect of decision-making. We shall no longer have the luxury of time -- except possibly in the short supply of seconds or minutes --

in reaching a determination to act in the event of an enemy attack. However, we do somehow expect that alertness and military readiness will be with us in high degree with little or no effort on our part. And we further assure ourselves that an aroused nation will inform its elected representatives of its desire for them to act in support of our chosen leader when he requests the power to carry the country into war. We have gone part of the way in consenting to Presidential commitment of troops under certain conditions. But we fail to realize that minutes after the initiation of unexpected total war there may be no representatives and no President left to act. Decision to act may rest upon someone quite far down the echelon. For this reason, as well as for other equally cogent ones, our planning for 1965-1970 must include facilities for educating the American people to the need for a virtually automatic, "fail-safe" mechanism for military decision-making.

Involved also in these questions of preparedness for total war is the problem of whether IRBM s are a proper part of the national arsenal for such conflicts. We shall have to place questionable dependence upon these intermediate range missiles for some time into the future, and a goodly proportion of them would have to be fired from foreign soil, where they may be subject to actual sabotage or to political impediments to their instant use. Until the ICBM is available in quantity and at relatively invulnerable installations, SAC bombers and the IRBM would have to bear the burden if all-out war came upon us. There would be the additional possibility that both these elements of our strength might not survive the initial enemy onslaught. It appears that planning for the national security poses some questions as to the suitability of the land-based IRBM as a retaliatory weapon after 1965, and these questions should receive more consideration than has been given them. The FBM (Fleet Ballistic Missile) appears to have the greatest potentiality as a dependable retaliatory weapon system for the period we are considering.

Planning for future weapon systems and their employment calls also for much more study on such topics as early warning measures, the proper utilization of tactical atomic weapons, the role of nuclear-powered naval vessels, the potentialities of nuclear-powered aircraft, and the consideration of space vehicles for military use. Each of these topics should be treated at length in future studies so planners may assess the place and function.

of these and various other elements in the weaponry with which they will have to deal in their programs for national security.

In considering preparation for limited wars we will have greater assurance of latitude in our response to the particular situations we may face. In essence, there is just one type of total war (although there may be slight variations in its prosecution depending upon the state of our weaponry at the date of its onset). But there may be many types of limited wars, each of them requiring different approaches and flexibility in action. To give specific examples of what we have in mind would illustrate the diversity of the problems that would arise.

The Middle East is viewed as a most likely area in which limited war may occur. The character of the region -- at the edge of a land-locked sea; relatively sparsely populated land areas; a one-product economy, but that one product highly important; indigenous populations, except in Israel, of limited reliability; religious and cultural complications overshadowing political divisions; and the significance of the area as a bridge between the Communist bloc and one of its prime targets for future expansion -- Africa. Limited wars fought in such a region will certainly call for different plans, different weaponry, and different emphasis from ones occuring, say, in the island territories of Southeast Asia.

Or, if we can contemplate the possibility of a limited war in Western Europe -- an East German attack on West Germany with the Soviet Union clearly holding itself aloof -- the situation would require very special action on our part under the NATO agreements to resolve the problem without expanding the war into a total one. With the action would come a quite different requirement for the types of weapons, the attitude toward concentrated civilian populations, the preservation of industrial and transportation resources, etc.

What about limited wars in our own hemisphere? Latin American nations under the terms of the treaty of the Organization of American States (OAS) are not supposed to make war upon one another. But the likelihood is that during the 1965-1970 period we may see several outbreaks in the area south of the Rio Grande. In such instances the United States will become involved both as a member of OAS and as the guardian of the hemisphere under the Monroe Doctrine in its 20th century application. We shall have to plan and

move quite carefully to restore peace in the event of such wars without embittering the Latin Americans and turning them toward dependence upon a non-American power for support and sympathy.

Enough has been suggested to indicate that planning for limited war involves logistics, force compositions and strengths, political attitudes, and specially designed weaponry quite different from the requirements for total war. We cannot afford to create and maintain two separate military establishments to answer possibly dissimilar requirements. We can afford, however, the luxury of an integrated national security program that keeps us organized to meet the challenges that will come before us in the decade ahead. This topic of the requirements for limited wars vs. the requirements for total war demands much greater study than has been possible thus far in this TEMPO project. The specific requirements are individual in themselves -- but they are part of a whole that must be faced sometime in the 1965-1970 period because unplanned-for limited wars will almost certainly endanger our national security to a degree that we could be quite unready for total war.

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