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THE UNITED STATES AND THE WORLD  
IN THE 1985 ERA

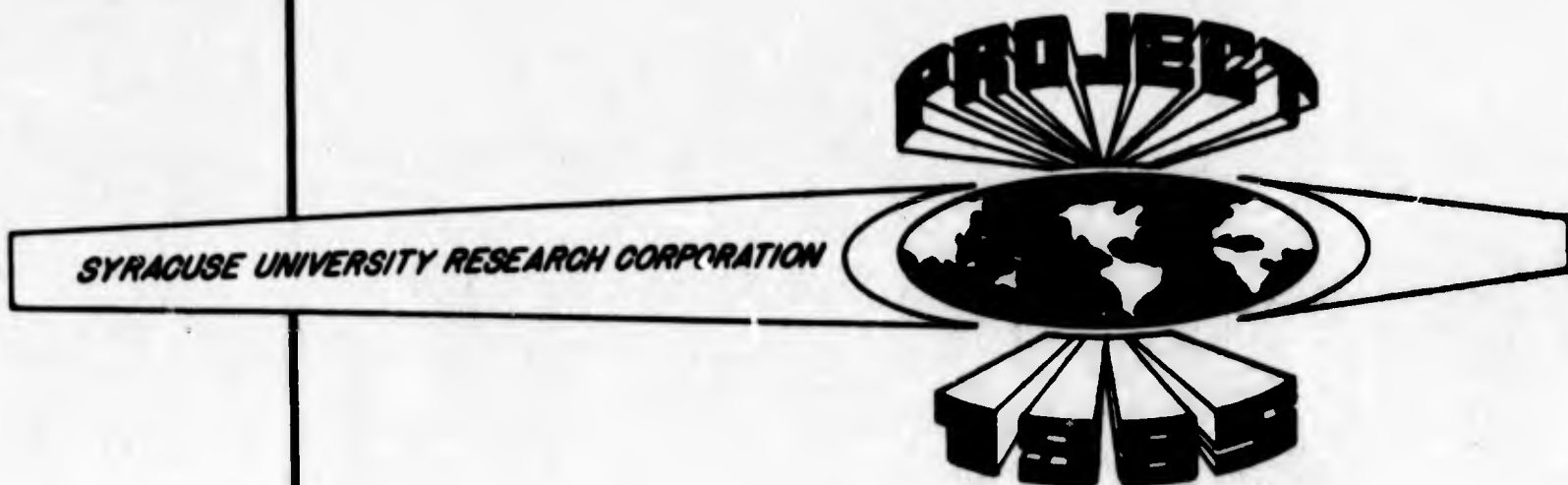
Prepared under Navy  
Office of Naval Research  
Contract NONr 4345(00)

March 1964

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**THE UNITED STATES AND THE WORLD IN THE 1985 ERA**

**A series of projections prepared for the United States Marine Corps by scholars from the Physical and Social Science Faculties of Syracuse University with the assistance of outside consultants and under the auspices of the Syracuse University Research Corporation.**

**15 March 1964**

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## PREFACE

The United States Marine Corps has asked two teams of scholars at Syracuse University to predict what certain aspects of the world will be like in 1985. In the language of the Marine Corps, "This study will examine projected national objectives and policies, and international and domestic military, economic, and technological factors affecting the United States in the 1985 era."

The physical and social scientists at Syracuse University who have collaborated on the present study have been placed in an unusual role. Social prophecy is an uncertain art. Extrapolations of trends bump into known and unknown variables and functions which can skew statistical projections beyond recognition. In 1938, for example, seven Harvard and Tufts economists predicted a listless American economy that would drift into an indefinitely weak future. Many of the leading demographers of the 1930's, moreover, predicted a declining world population for the remainder of the 20th century. Predictive failures of such magnitude are sobering, but unlightening, for they produce no automatic corrections for new predictions. Natural catastrophies, the emergence and disappearance of leaders, wars, pestilences, scientific discoveries, ideological changes, and

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many other factors interfere with the maturation of even the most sophisticated social predictions.

This initial disclaimer is not to suggest that the authors of this monograph lack faith in their prophecies. It is to say that this faith is tempered by a reasonable recognition of the difficulties inherent in making valid social predictions. The authors believe that, taken together, the predictions of this study will correspond closely with the reality of 1985. But the probability will be far from perfect, and some failure of correspondence is inevitable.

Even this restricted degree of optimism rests upon certain assumptions fed into the study by the sponsors. These assumptions are:

- (A) A requirement will exist for a military force to support national objectives.
- (B) Nations will continue to take unilateral action to attain specific national objectives despite multilateral commitments.
- (C) Arms control and disarmament agreements will not prevent the initiation of offensive action by any power.
- (D) General war will not occur before 1985.

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- (E) Scientific and technological progress will continue at the same or accelerated rate.
- (F) The United States will maintain a leading role in world affairs.
- (G) The United States will maintain a broad economic base.
- (H) Scientific and technological progress will have a significant impact on the conduct of military operations.

Aside from a growing uncertainty about (B) and (E), and a recognition of the obvious dependence of (F) upon (G), the authors have accepted these assumptions.

On the authors' side, two major working assumptions condition virtually everything in this paper. The first is an historical assumption: continuity. As the first of Professor Cheyney's "six laws of history" proposed more than a generation ago, the law of continuity means simply that "in the great majority of cases one generation goes on doing and believing what the previous one did and believed." (J. H. Robinson, The Human Comedy (London: The Bodley Head, 1937), p. 73.) Historically speaking, 20 years is a very short space of time. There is always a tendency when looking ahead to project dramatic and even bizarre developments. For example, David Sarnoff, President

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of RCA, made predictions in 1956 for the year 1976. Mr. Sarnoff said, in part, that by 1976 we will all live in a world of 5,000 mile-an-hour planes, controlled weather, and push-button homes. We will travel in nuclear-powered autos. The sun's rays will be harnessed for worldwide use. Individuals everywhere on the globe will be able to talk to each other and see each other as they talk, regardless of distance. Electronics will bring light without heat, without glare, and almost without shadow. Electronic computers will take over accounting and recording tasks, and free the majority of nine million Americans now working on clerical tasks. Chemical and biological discoveries will greatly expand man's food resources. An avalanche of improvements in preventive medicine will extend man's useful life by a hundred years.

And all of these miracles, Mr. Sarnoff went on, will be available in a warless world in which Soviet Communism will have collapsed under the weight of its economic fallacies and political follies. Finally, he predicted a high living standard as an almost universal realization.

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On a few items, Mr. Sarnoff's predictions may be conservative, but most of his predictions seem to the Syracuse team highly improbable. If the predictions for 1985 in the following report seem to some readers a rather conservative extension of the world of 1964, they are reading the minds of the authors correctly. Operating on the assumption of no general war between now and then, the authors see no forces at work in the modern world sufficiently cataclysmic to produce more than marginal adjustments in the technology, power arrangements, and value patterns which are already with us, or which can be observed on the present horizon as "clouds no bigger than a man's hand." For reasons of temperament or professional mindset, the scientific and technological predictions in the report may err slightly on the conservative side, and the institutional and social changes on the optimistic side. But even on the technological predictions it is well for the reader to remember that decades and even generations separate new scientific principles from the engineering and economic possibilities of meaningful social application.

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The second working assumption of the authors, not unrelated to the first, has to do with man's political nature. In general, man is slow in revising his attitudes and loyalties. Man's actions are motivated and directed by an amalgam of short-run self-interests--tempered and rationalized by prudence, by ethical and religious propositions, by constraints imposed by society, and by both conservative and revolutionary myths propagated by political leaders. Man is essentially a small town animal. He has only artificial means of dealing with general and distant events. Fears of not cooperating with other men and other societies are constantly at war with fears attendant upon the consequences of such cooperation.

For example, man's terminal political loyalty today is the nation state. To an invader from Mars, man might identify himself as an "earthling"; but on the surface of the earth itself, man identifies himself ultimately as an American or a Russian or an Indian or a Brazilian. This loyalty is so deep and so rooted in the realities of political power that it seems to the authors improbable in the extreme that by 1985 man will have turned to the United Nations or any other trans-national body for either a total or a substantial subjection to world government. In consequence, the authors' references to extended power and influence

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for the United Nations and other international agencies by 1985 must be viewed in terms of overlapping identities of divergent national interests--particularly among the great powers of the world.

The United Nations and other international agencies will become stronger, not because great powers will suddenly exorcise all traces of mutual suspicion and hostility, or will desire to give up portions of sovereignty. The United Nations and other international agencies will become stronger because in a highly interdependent world in which tinder is widely and thickly scattered, a cooperative fire department is in certain specific cases a useful means for putting out sparks--sparks which if left to themselves could flare into thermo-nuclear hostility viewed as disastrous by friend and foe alike. The Ballantine ad of slightly overlapping circles may provide useful imagery here. In 1985, great powers will continue to have their own divergent circles of national self-interest and will take unilateral action whenever self-interest seems to dictate. But the areas of overlapping self-interest among nations will be even greater than today and will, we believe, extend the role and influence of international bodies of all kinds. In this extension, prudence and convenience will

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be abetted by both the compassionate and expedient responses of the "have" nations to the misery and poverty of the "have nots."

This again implies the use of the United Nations and its specialized agencies for development services to the low-income areas of the world on an extended scale while not precluding bilateral or other multi-lateral aid by competing world powers.

The 1985 project at Syracuse has been prepared by two cooperating teams: one made up of natural scientists and engineers, one made up of social scientists. The natural science team proceeded through a series of working papers, prepared by discrete task forces of specialists, to a summary paper on Science and Technology. The individual papers will be submitted separately to the Marine Corps. The summary was turned over to the social science team in the Maxwell School for purposes of selected incorporation into the final, integrated report. The social science team has worked as an integrated unit from the beginning--synthesizing insights and extrapolations in a series of colloquia often enriched by the presence of invited outside specialists. Concurrently, relevant published materials and statistical projections were collected and circulated to the eight participating

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social scientists. Three social scientists took the responsibility of roughing out the preliminary draft of the final report which was then circulated to selected members of both the natural science and social science teams for comment and criticism.

In areas where responsible scholars and government officials have made statistical projections for 1985, these have been used and are attached as annexes to this report. In areas where no responsible projections have been made, reliance has been placed on the informed judgments of the participating Syracuse scholars and collaborating experts. Hunch has been subjected to dialectic argument. Propositions have been established, modified, refined, submitted to empirical relevance, and sometimes discarded. Predictions of varying degrees of probability remain. For stylistic reasons they have been stated with an undifferentiated dogmatism rarely felt.

The paper is organized into two main sections. The first deals with the United States in 1985: its economy, value pattern and polity. The second section looks at the world external to

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America, and the future relationship of this external world to the power position and the international responsibilities of the United States. Following these main sections, however, is a summary analysis entitled "Some Implications of the Predictions in This Report for the United States Marine Corps." This is not a content summary of the entire paper. Rather it reflects an attempt to select from the paper a number of propositions which seem to the authors to have immediate and special relevance to the planning and operations of the Marine Corps. Those in the Corps who read the entire report will inevitably find other and, hopefully, more suggestive implications. But the authors hope that the selection of a few implications of these propositions will be of help to the Commandant of the Marine Corps as he attempts to wrestle with an uncertain future.

Actually, the concluding implications, and many of the predictions in the body of the report, lead to a general proposition about the future conduct of American foreign affairs which seems to the authors of overriding importance. That proposition is that the varied instruments of American foreign policy need a far tighter orchestration than they presently enjoy if the United States Government is to

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prepare itself for the "infusive diplomacy" of the 1964-85 period. Webster's dictionary defines "infusion" as the "introduction of one thing into another so as to affect it throughout." The extent to which America is already engaged in "infusive diplomacy" is suggested by the varied instruments of American foreign policy listed by the Herter Committee on Foreign Affairs Personnel: "...all the tools of traditional diplomacy (including military power); international law; intelligence; political action; technical assistance and various types of economic aid; military aid programs; information and psychological programs; monetary policies; trade development programs; educational exchange; cultural programs; and...measures to counter insurgency movements."

But the Herter Committee does not exhaust the implications of the term "infusive diplomacy." For "infusive diplomacy" is not only multi-instrumental, it is multi-national. Nations rarely act by themselves any longer. The diplomatic task is to mobilize several inputs from several nations to fashion diplomatic outputs consonant with our national self-interest. We not only mobilize our own spectrum of resources for purposes of activating meaningful infusions into potentially hostile

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or disruptive situations abroad, we work with and draw upon the resources of allies (and sometimes even enemies) in organizing such infusions. We not only work with other nations, either carefully chosen or forced upon us by circumstances, in furthering our clear and present national interests. In the process of interrelations with others, we achieve new formulations of our ever-evolving national interests. Infusive diplomacy should not be regarded as merely an instrument of attaining pre-conceived objectives. It is part of the never-ending process of discovering and determining the variegated pattern of our national objectives.

"Infusive diplomacy" is neither the same as the confrontive actions of force of our military traditions, nor as the bilateral negotiating activities of international statecraft--although it contains aspects of both. The term "infusive diplomacy" is far more descriptive of reality--present and future--than terms like "limited war" (which suggests confrontive war on a limited scale); or "cold war" (which connotes an ideological stand-off without intimate, multi-dimensional penetrations). "Infusive diplomacy" is multi-instrumental, multi-national international politics. Its essential nature is summarized.

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in words in this report. "The employment of force by any state to reach its political goals will be far more sophisticated and more complicated in 1985 than at present: a delicately ascending scale of psychological, economic, and military techniques--developed usually in concert with selected other nations--in terms both of good definition and policy execution--utilized either to crack morale, disrupt the livelihood, and enervate the power of any potential enemy, or to cut the fuse of explosive unrest in neutral areas of the world."

The essential job will be not to destroy (for reasons of fear of reprisal), but to influence, penetrate, contain, and liberate.

If military organizations are to become effective partners in the skillful deployment of instruments for "infusive diplomacy," they must be far more integrated in terms of policies, organization, and operations with other centers of foreign policy-making--especially the Department of State--than they presently are. They must also be prepared to undertake non-traditional and often multi-national missions (sometimes perhaps in non-traditional uniforms) as "infusive" forces of our total foreign policy. Whether, of the various military organizations in the Department of Defense, the Marine Corps should

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be assigned the task of pioneering certain aspects of these new relationships with other centers of foreign policy-making is beyond our competence to judge. It is sufficient here to state a patent and overall need.

Whatever value the following report may have for its sponsors, the authors wish to acknowledge the enrichment they have derived from the community of discourse among natural and social scientists-- a community of discourses unique in this type of projection. The authors are deeply grateful to the United States Marine Corps for its financial and catalytic support to this intellectual endeavor.

The report which follows represents not unanimity on detail, but consensus on matters of general direction. The participating scholars absolve the Marine Corps from any and all responsibility for facts, conclusions, predictions, and implications contained in the study.

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## PART I

### THE UNITED STATES IN 1985

What reasonable predictions can be made about the economy, values, and polity of the United States in 1985? Obviously, words like "economy," "values," and "polity" are shorthand for a range of specific questions raised initially by the Marine Corps. The national profile which follows does not answer all of these specific questions; and it contains a few propositions which go beyond issues initially identified for attention. But the authors share with the Marines a belief that the ingredients of national power and character are fruitfully explored in terms of concepts like "economy," "values," and "polity." These three approaches to national life are obviously inter-related--and more tightly so in 1985 than in 1965. But separately, they are useful categories for projective analysis.

### THE NATIONAL ECONOMY

By 1985, the total production of goods and services in the United States will exceed one trillion (1964) dollars--almost double the 1964 GNP,

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with an appreciable increase in per capita and per family income. The functional distribution of income will see a slight increase in labor's relative share (mainly in deferred wages), a decrease in agriculture's relative share, a slight decrease in industry's relative share, an increase in the relative amounts flowing to governments, at all levels, and a large increase in so-called transfer payments.

This growth will have been bought at the expense of substantial human dislocations and institutional readjustments. But in terms of general living standards, the overwhelming majority of the American people will be better off in 1985 than they are today.

The attendant dislocations and readjustments will be reflected in a higher percentage of the Gross National Product in public expenditures, although in 1985 the distinction between such terms as "public" and "private," "consumption" and "investment," "employed" and "unemployed," "domestic" and "foreign," "civilian" and "military" will have become so blurred that the present national income accounting system will long since have undergone major revision.

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For example, expenditures for education are presently listed as "consumption" expenditures rather than "investment" expenditures on the national income account. It is becoming increasingly obvious that expenditure for education may be the most important "investment" a society can make. Similar anomalies exist in other traditional conceptual dichotomies.

In more detail, the state of the U.S. (and world) economy twenty-one years hence will be conditioned, as today, by three major forces:

1. The quality and quantity of human and physical resources.
2. The sophistication of techniques of organization and management; and
3. The creative input of science and technology.

To these we now turn.

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### Human Resources

#### Projections

By 1985, the following conditions will obtain in the area of national human resources:

1. Population - The population of the United States will have reached between two hundred and fifty and two hundred and seventy-five millions. It will be a young population. The median age will be under 30; 45 to 50 million males will exist between ages 18 and 50.
2. Education - The number of young people enrolled in institutions of higher education, including technical and professional schools beyond grade 12, will have reached well over 50% of the population of age group 17-25. Post-entry and mid-career training, and adult education of all kinds, will have increased substantially--both to up-grade and to retrain skills, and to provide meaningful leisure-time, self-development activities for millions of adult men and women faced with shorter hours of work.

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3. Multiple Careers and Military Reserves - The draft of young men into military service will become an increasingly unsatisfactory way to meet the needs of the armed forces for manpower. Voluntary enlistment will prove inadequate to the specialized performance required of military service at all levels in the future. Because of ever-increasing automation and productivity in the United States, it will be possible for an adult by 1985 to spend part of each week, each month, or each year in a factory or office; part of his time in education and training; and part of his time in public service, including military service.

A substantial number of military installations will operate on a two or three shift basis. General command and management will be provided by full-time military professionals. Through arrangements with industry, universities, and professional societies, and by agreement with individuals, technical and professional officer ranks will increasingly be filled by short-term reserve personnel. These will move in and out of civilian life to man technical installations or ready-stations at home and abroad, or to participate in further training of value to our defense posture. Incentives of extra income or of paying

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off educational indentures will compensate for intermittent family disruptions in insuring a stable resource of military manpower--and with far greater continuity of service than at present. An increasing number of women will be used in military installations in technical and professional fields.

4. Labor Force - By 1985 the composition of the labor force will see a reduction by half of the number in agricultural employment; a substantial reduction in manual work in manufacturing and mining; a substantial reduction in routine repetitive functions and clerical office employment; a marked increase in inspection and machine control functions; and a marked increase in sales and services. Full employment will not exist, as that term is understood today; but private enterprise and the State will have fashioned through education, public works, recreational facilities, cultural opportunities, and socially-useful public services a society in which meaningful social roles are performed by almost all except the very young and those past retirement.

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5. Negroes - Negroes will be more fully integrated into all aspects and levels of the economy than they are at present. Negroes with high level professional and scientific training will be accepted far more than at present in the highest ranks of corporate and public management. Unfortunately, unskilled Negroes will still represent a majority of the urban poor and governments will still be concerned with upgrading their skills and with giving them meaningful social roles.

6. Urbanization - Eighty to ninety percent of the population in 1985 will live in or near roughly 240 metropolitan centers--most of which already exist. As population pressures expand in these metropolitan areas, large-scale military bases in their paths will be induced to move or to decentralize into efficient, smaller units.

7. Health - By 1985 population will not be substantially healthier. Publicly-supported outpatient clinics will be common for mental as well as physical illness, but new viral and allergic diseases will keep pace with cures for old ones, and mental illness will continue to grow. By 1985 a large and important segment of the medical profession will be in active partnership with governmental, educational and

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communications experts to help the public prevent its own diseases.

These very extensive increases in public health and preventive medicine activities will be added to presently evolving, and constantly improving, methods of caring for sick individuals. The average life span will have increased only slightly; but older people will be more active and in general will feel better longer. Publicly-supported medical care systems will long since have come into being, although private medical practice and insurance will still flourish.

### Physical Resources

#### Projections

Within 21 years the following conditions will obtain in the area of national physical resources.

1. Electric Power - installed capacity will increase more than three-fold in the United States to about seven hundred million kw. .

Drastic changes in the electric power picture between now and 1985 would occur only if technology were able to conquer the economic and technical problems of "fusion" power. This is most unlikely in a twenty year span.

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In consequence, the major source of fuel for power production will still be coal, although the percentage of atomic fission power will have increased as nuclear fuels become more competitive with fossil fuels in some developed areas. The percentage of hydroelectric generation will have decreased. Higher voltage transmission lines will link larger central stations into a national (and Canadian) power grid to obtain higher load factors and greater reliability. Improvements in fuel cells and storage batteries will have wide-spread implications for industry, for the military, for home appliances, and for transportation and communication--but with little overall effect on the present pattern of power consumption.

2. Water - Apparent water shortage problems in the next two decades will be solved by better water management. Water will cost more in 1985. De-salting sea water or brackish water for household or even industrial use will be economically justified in some arid areas, and is expected by 1985 to have been substituted for most existing fresh water resources in Southern California--except for irrigation purposes. Not even a dramatic decrease in the cost of power, such as might be conceivable if fusion power became a

technical reality, would make practical the desalinization and distribution of water from the sea to irrigate the arid areas of America by 1985, because the non-fuel costs alone would preclude the economic feasibility of such water usage.

3. Fossil fuels - liquid hydrocarbons in 1985 will be in sufficient supply in the United States to meet the projected energy needs for industrial, heating, and automotive purposes. Most liquid hydrocarbons will continue to be supplied from petroleum but increasing amounts in North America will be derived from tar sands and oil shales. Regardless of the raw materials used, refining products of 1985 will be essentially of the nature presently produced. The heavy capital investment in production, refining, and transportation facilities will militate against large-scale changeover to other forms of energy in those activities now largely dependent upon liquid and gas hydrocarbons for primary energy. Pipelines carrying liquid-coal slurry may compete with rail transport for moving coal. Far greater attention will be paid to on-site industrial and refining complexes-- especially in areas rich in coal.

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4. Mining - By 1985 adequate supplies of required mineral commodities will be available in the United States. Short-run readjustments will be met by the use of substitute commodities or the development of new domestic supplies. Federal planning, regulation, and protection of mineral resources will be substantially greater. New and improved geophysical exploration tools coupled with significant advances in the technology and economics of deep drilling will permit successful exploration of buried basement terranes for new sources of metallic ores. These developments will enhance the status of mineral commodity resources nationally. Substantial advances in mining technology will have been made by 1985 which will permit economic exploitation of relatively low-grade ores on a large scale. Important improvements expected by 1985 include remote control mining methods, biochemical concentration of low-grade iron, silver, copper, and manganese ores, solution mining principally of salines and in situ mining, smelting, and refining of underground ores.

5. Agriculture - In 1985 the United States will have increased its world lead in animal protein and major crop production. This increased production, combined with new methods of freezing, dehydration, and

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irradiation will be a major factor in keeping the world free from mass starvation, and in supporting American diplomatic and defense activities the world over. The acreage of cultivated land in the United States will continue in its decline while production and yields will steadily rise. In addition to new energy inputs, improved seeds, chemical fertilizers, and weed and insect killers, stimulants to agriculture productivity by 1985 will be found in new genetic and chemical "multipliers." These multipliers will allow for more production with less labor on less and less land. One of the most impressive multipliers will come through "molecular engineering," which will accelerate plant and livestock growth by chemical techniques. Agricultural output per man hour will almost double by 1985. The output of livestock and farm products will increase by at least 50%. Americans will continue to have the highest caloric intake of any people in the world.

Agriculture by 1985 will still be a hodge-podge of public and private planning.

6. Industry - American industrial production will have doubled by 1985. There will still be five to six hundred major corporations which

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will produce between two-thirds to three-quarters of American industrial output. Industrial corporations will be larger, more complex, more computerized, and more international than at present. Automobiles, steel, chemicals, food processing, plastics, clothing, shelter, household consumer durables, defense and space hardware, and electronic data processing machines will continue to account for most industrial jobs.

Union labor will have decreased as a percentage of industrial employment but will still be powerful in selected industries like transport, communications, and building trades. The Federal Government will have increased its role in settling and containing industrial disputes. Union structure will tend to follow industrial structure--more so than at present--and there will be more unions, but they will be more intimately related to their industries.

The trend toward continuous processing will be accelerated because of the availability of sophisticated computerized control systems. Continuous casting will be in active use by 1985 along with continuous production of high-grade, alloyed, heat-treatable steel. Fiber and clothing will feature synthetic materials equal or superior

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to natural fibers in all respects: moisture absorption, insulating property, heat resistance, air resistance, dye stability, long wear. Plastics will continue to grow in importance and along with aluminum will reduce the percentage use of steel. Ceramics will be more varied and of better quality and will be in wide use.

In the secondary industrial processes there will be a substantial shift away from cutting to plastic forming and casting. Improvement in joining processes will make it practical to use more composite materials such as laminates or honey-combed panels, which combine lightness with strength. Highly-instrumented production facilities will make the whole factory of the future operate like one huge machine. Mechanisms of control and complete automation will be feasible in many industries. Human effort will be largely concerned with the design of equipment, building of the equipment, installation, monitoring, and servicing. The distribution of skills in the industrial labor force will change over the next two decades, shifting to eye-mind skills from manual-technical skills in many industrial processes. Skill will more and more reside in the machine rather than in the operator.

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Air pollution will receive increasing attention scientifically and politically between now and 1985. If nothing were done about it, increased industrialization would make the problem more severe. However, increasing knowledge of the pollution effects and hazards of various processes and of means of elimination will cause a great increase in laws regulating both air and water pollution generating processes. These laws will restrict the location of plants and of the processes they use, and they will probably cause a great increase in electric automobiles in urban centers by 1985.

7. Communications - By 1985 significant advances will have occurred in semiconductor amplifiers, microwave techniques, and radar. More compact and lighter-weight sets of radio, television, tape recorders, and telephones are reasonably assured. Cost of long distance telephone will drop drastically. Video telephone circuits will be available for business use by 1985. International communication facilities will accelerate the use of English as an international language.

Computer translating machines will aid in international communications, but will not replace human translation. While written

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information will be generated at an ever increasing rate, and machines for information retrieval will become more and more sophisticated, a high premium will be placed in 1985 on talents expert in interpreting data. The expanded use of computers will have a marked effect on communications that inter-connect widely separated facilities. The tie-in between computers and facsimile communication facilities will make possible by 1985 the wide distribution of single daily newspapers.

The marriage of computers and communication systems will affect business and public life by the electronic transmission of pay checks, additions and subtractions of wages and taxes, and other financial, market and economic information stored in central data processing locations. Central data processing machines will facilitate the central storage of individual and firm credit rating, tax records, criminological and employment opportunities and other data now widely and inefficiently dispersed. Centralized bookkeeping and accounting as a bought service will be common.

8. Transportation - Current modes of transportation will remain dominant in 1985: private automobiles, trucks and buses, airlines, railroads, and surface vessels. The major deterrent to

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rapid changes in transportation systems is the slow rate of write-off of capital equipment for tax purposes in comparison with its technical obsolescence. Economic, sociological, legal, and administrative regulatory factors are of primary importance in determining what developments will or will not occur in transportation industries.

There is no foreseeable force that will replace or curtail in the next 20 years the 90% of inter-city passenger traffic carried by private automobiles. Futuristic ideas of highway engineering or automatic piloting of individual automobiles, while technically feasible, will not be in wide use by 1985 because of the huge investment required. Improvements will have been made in traffic control. Better designed roadway interchange and computer-controlled signals and traffic flow will be the primary mode of improvement. The basic design of the automobile will be about the same. Gas turbine cars will find wide use in heavy-duty vehicles and possibly in smaller automobiles. At a cost comparable to present day cars, electric automobiles will be widely used for intra-urban traffic--partly because of their quiet and trouble-free performance and lower maintenance costs, but mostly because of their minimal effect upon air pollution. Truck traffic will

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continue to expand, particularly through "containerization," the realignment of the corporate structures of common carriers, and modifications of rate structures. "Containerization" and "miniaturization" will make possible quick and economical cargo transfer between trucks, airplane, railroads, and ships or barges.

Greater public investment in railroads will long since have occurred so that mail and freight transportation will be substantially improved by 1985. Passenger traffic will continue to decline on the railroads, except for short-run 50-300 mile trips in congested areas. Use of existing rights of way, but with new equipment and technology, will enable rail transportation to reach an average speed of 100 miles per hour, achieved by lighter-weight metals, lower centers of gravity, roadbed realignments, and electrically-controlled loading schemes. Under these conditions, there will be little incentive for futuristic types of rail service such as monorails, Levi cars, flight tubes or the Westinghouse motor-in-roads. Nuclear locomotives will not be feasible because of shielding requirements, high cost of development, and fear of accidents. The use of pipelines for gas, oil, and water will increase as well as the transportation of coal by pipeline.

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Airlines will be the dominant common carrier for long-distance passenger traffic. Supersonic aircraft with speeds up to Mach 3 will be in general use by 1985 for trans-continental and inter-continental flight. VTOL and STOL aircraft will be in use for short and intermediate routes linking more cities. Private airplanes, including air automobiles, while increasing in number, will not be an important means of personal travel, because even with mass production, the costs of craft suitable for large-scale public use will be prohibitive. More cargo will be shipped by air, and jet cargo planes will tend to generate their own traffic rather than take it away from other carriers. Nuclear airplanes will not have come into general use.

Space and orbital vehicles will not be used for transportation of cargo or persons on earth in 1985.

Surface vessels will predominate in transoceanic cargo service. More nuclear powered cargo ships will be available but these will largely be confined to very long routes such as Pacific transport.

The transportation of people over water will continue to be principally by surface vessels of conventional design but with greater

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speed, comfort, safety, and more highly automated control features. This mode of oceanic travel will be preferred mostly for recreational reasons. Transoceanic hydrofoil vessels do not appear to be feasible.

No significant change is anticipated in the use of inland lakes, rivers, harbors and canals for business, freight or mass transportation. However, recreational use of these facilities will increase. The hydrofoil vessel will have some limited use in transporting people in groups under 100 over these water routes, and it may have some limited value as substitute for PT-boats and high speed landing craft in military operations.

### Organizations and Their Management

The relating of human and physical resources to economic and social goals is the function of organizations and their management. Since the 1920's, and up to the present time, organization and management theories have been built around relatively simple and stable concepts such as "hierarchy," "formal and informal organization," "span of control," "staff and line," "work measurement," "accountability," and "efficiency." The behavior of large-scale organizations in the 1960's--

let alone the even larger and more complex organizations of the 1980's-- cannot be understood within the framework of these simplistic concepts.

In 1985, the management of vast and complex systems will be possible only within a theory of formal organization which allows for:

- (1) a high degree of decentralization of operations and dispersion of managerial functions;
- (2) multiple and often conflicting hierarchies within organizations (rather than a single pyramid of authority and accountability);
- (3) polyarchic (shared decisional) relations within and among organizations producing tensions of mutuality;
- (4) increased use of electronic and mechanical control systems;
- (5) an increased number of trans-national organizations;
- (6) an increased specialization and professionalization within organizations affecting loyalty-patterns and peer-patterns which extend beyond single organizations; and
- (7) More manager-specialist combinations in the decisional process.

In sum, the organization man of the future will have uncertain lines of responsibility and command; he will bargain for what he gets, rather than order it; he will rely more heavily, and at times speciously, upon computers and other cybernetic machines; paradoxically, he will be far more concerned with human factors and personality feedbacks in the decisional process.

His prototype in the 1960's is to be found in the Department of Defense and in the large-scale American university (what Clark Kerr has called the "Multiversity"). These organizations are characterized by size and by a multiplicity of functions. Managers within these organizations are forced to adopt techniques and machines for enhancing over-all control of the total system; but they are also forced to decentralize operations, deal with multiple hierarchies within the system, and relate to other systems in a tension of interdependency and competition. Negotiating, bargaining, and brokerage functions are of the essence of managerial skills in such organizations. Goal-setting is a complex and conditional exercise.

Although by 1985 management will have at its disposal far more sophisticated methods for the storage and retrieval of information, for

intra- and inter-organizational communications, and for speedy transportation, these developments will make the life of the manager more complex. One of the paradoxes of the future is that while an increasing number of managerial decisions will be handled by automatic data processing, buttressed by clear and swift communications networks, the intelligent direction and coordination of large-scale systems will place an even greater premium than at present upon the wise, artful, and broadly-experienced general manager in organizations characterized by operational decentralization. In short, the proposition that effective decentralization can occur only where organizational centralization has become efficient will have become increasingly recognized, not as a paradox, but as a logical reality.

As a consequence, by 1985, university and in-house development courses for executive talent at both the junior and mid-career level will be an accepted necessity. Such training courses will stress new theories of organization, suggested above, and will emphasize far more than at present the psychological and social aspects of management and communications within large-scale organizations.

Science and Technology

Some material on science and technology has inevitably found its way into other parts of this report.

This particular section is devoted to some general propositions about science and technology and to a series of disjunctive statements which could not readily find a home elsewhere.

Between now and 1985 the rate of growth of science and technology in the developed world--a growth rate which has been a prodigious aspect of human history for three centuries--will slow appreciably. The consequences of this slow-down in the rate of growth are difficult to predict, but the slow-down itself--in the United States, in the Soviet Union, and in parts of Western Europe--is certain. One cannot extrapolate the present growth rate of science for another two decades in these developed areas without running smack into effective limitations of brain-power and money. Technology's relative decline in its rate of growth will be less dramatic.

Despite the increase in the number of Americans attending technical and professional schools, by 1985 scientists and technologists

will have become relatively scarcer resources in the United States.

This fact will bid up their "price," will make competition for their services acute, and will create traumatic resource allocation problems for scientific advisors to government. Importation of scientific and technical skills from other parts of the world will increase, but by 1985 it will have become increasingly difficult to secure and to hold talented aliens. The United States will most certainly increase its participation in multi-national scientific organizations.

In sum, although the absolute input of science and technology into American economic life will be greater twenty years hence than at present, the rate of growth of this input will have leveled off with disturbing but only partly foreseeable consequences for the government (including the military), for the economy, and for the society as a whole.

Within this general framework, what will science and technology have accomplished during the next two decades? Aside from probabilities mentioned in other parts of the report, the following generalizations may be of interest.

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### Pure Science

While it is hard to predict the future interests of scientists, the following selected problems seem to pique present curiosities and will bear upon discoveries in the next two decades:

1. Astrophysics - In astrophysics, will new principles of physics be required to explain high energy emissions from the most distant stellar clusters?
2. Theoretical Biology - In theoretical biology, the nature of the mechanism of gene action will still be under investigation. Other important questions will be: What regulates embryonic development and controls cellular growth in adult organisms? What is the mechanism of hormone action? What is the nature of aging processes? What are the biochemical factors important for understanding the effects of stressful situations? What relation do these have to mental illness? What are the relations between "psychic processes" and the various manifestations of physiological malfunction (allergies, hypertension, etc.)? What are the most effective protective measures against ionizing radiation?

Research on these and related matters may well have practical pay-offs by 1985 and will have led to the development of highly selective and effective chemical controls of insects and various other pests having economic importance. There will be less expensive and easier-to-use methods of birth control and radical improvements in the treatment of mental illness. Prolongation of vitality into later years of life will be achieved primarily as a result of better health habits in the affluent societies.

3. Energy - In the chemistry and physics of energy conversion, how can chemicals produce a greater interconversion of the various forms of energy? Will the high intensity fields of lasers give rise to interesting photochemical phenomena? Can an X-ray laser be developed? Can photosynthesis be understood and can related man-made processes be developed? What new types of compounds might be used to convert and store solar energy? How do catalysts modify molecular processes?

In high energy physics, can a theory of both strong and weak interaction be constructed? What conservation laws and concomitant particle properties can be discovered, and what symmetry principles

can correlate the latter? What new particles can be discovered? Do sub-units of so-called elementary particles exist, and if so, what is their structure?

Whatever the practical pay-offs of high energy physics research, it is obvious that the costs of such research are astronomical. In competition with other sciences, high-energy studies will be limited by the size of the investment needed for the required equipment.

Some of the practical implications of this research are included in the annex on High Energy Physics, but need no further comment in this general report because, by 1985, their impact will be minimal.

4. Materials - In the physics and chemistry of materials, key questions for the future revolve around optical, mechanical, electrical, magnetic and chemical properties of matter, as well as the variation of these properties with changes in composition and purity of materials. Research interest will be keen in problems of superconductivity, surfaces, phase transitions, high pressures, ultra high vacuum, both high and low temperature phenomena, the behavior

of matter in conditions of high radiation density, and the properties of extremely pure substances. Breakthroughs in these areas have both obvious and obscure implications for communications, substitutability of substances, new industrial processes, and new military equipment.

5. Oceanography and Earth Sciences - Basic and applied research in Oceanography and Earth Sciences is elaborated in separate annexes. It is only necessary to point out here that breakthroughs in these areas can have a vast effect upon the food, water, and mineral resources of the world in 1985 and beyond. Some of these effects have been mentioned in other sections of this general report.

Applied Science and Technology: Space

In the field of applied science and technology only one area has been selected for brief attention in this part of the general report-- the area of space science and technology.

1. Lunar Flights - It is predicted that the U. S. S. R. will send two persons, probably a man and a woman, on a lunar "fly-by" mission quite soon. It is also predicted that Russia will establish

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some sort of primitive space station, capable of keeping an individual aloft for a few weeks, with provision for supply and change of personnel, within a few years. It is unlikely that these predicted exploits would have major military or scientific significance, but they might give the American public yet another bad scare.

It is likely that the Apollo Project will be continued, culminating in a lunar landing in the early 1970's.

2. Mars - It is likely that between 1975 and 1979 there will be a U. S. mission of about 8 men landing on Mars. The total cost of this mission is estimated at \$18.5 billion, spread over more-or-less a ten year period.

3. Weather Forecasting - Satellites will serve as means of collecting important meteorological information for weather prediction and research. Claims have been made that this will make possible accurate long range (5 days or more) forecasting, but there does not seem to be any justification as yet for believing that long range forecasting will be highly accurate by 1985.

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4. Communications and Surveillance - World wide commercial operation of satellite relay communication systems is expected by 1970.

Military satellite systems for general intelligence surveillance may quite possibly be feasible before 1985 if adequate optical systems and particularly data-processing systems can be developed. Manned satellites may be the practical solution.

The use of satellites for surveillance of space against clandestine tests of nuclear weapons appears entirely feasible and may well be in effect already.

There appears to be a real military need for a space-surveillance system which can inspect and, if necessary, destroy hostile satellites. Manned space flight operations by the U. S. and U. S. S. R. have shown that satellites in orbit can be brought down on command with considerable accuracy. With the ever-increasing amount of junk material in space it will soon become impossible to keep account of space objects by ground-based detection alone. An aggressor might therefore be tempted to place nuclear weapons in orbit for later

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use, thereby circumventing any launch-phase detection scheme. As space rendezvous techniques are developed it may become desirable and feasible to visit various suspicious objects, hopefully in an inexpensive and re-usable vehicle. Such a vehicle might also perform important repair and modification services in support of other military or commercial systems; it has been estimated that the great majority of satellite failures might be repaired by a man with a screwdriver.

Use by the military forces (or anyone else) of satellites for routine or large-scale transportation appears most unlikely.

Military satellite communications systems will probably be developed in the next few years. These will have important differences from civilian systems.

5. Cost - From 1965 to 1985 it is estimated that the expense of the civilian plus military space program will be around one percent of the GNP.

6. Impact on Science and Technology - The impact of the space program on science will be greatest in geophysics and astronomy and

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related sciences. Direct technological impact will be greatest in the areas of electronics and communications, cryogenics, computers, optical systems, and nuclear power applications. In addition, it is expected that there will be very wide-spread technological "fall-out" in areas too numerous to mention. They range from improved instruments for medical research to improved glue for household use.

7. Impact on Natural Resources - Natural resources are not likely to be strained by the program in many areas, because the program does not involve a large amount of hardware. The only critical materials that we can foresee are fissionable material, (for nuclear rocket engines cannot be recovered for re-processing), and a few potential reactor materials such as tungsten (W184). The chief resources problem is apt to be scientific manpower.

8. Dangers - Certain parts of the space program have the potential for doing considerable damage. We already have examples in the Star Fish high altitude nuclear explosion, whose underestimated ability to inject electrons into the Van Allen belts caused

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a number of valuable satellites to fail and made a large portion of near-earth space "uninhabital"; and in the fact that the atmospheric concentration of sodium and a number of minor constituents is now due largely to rocket experiments.

9. Extra-terrestrial Life - The exciting possibility of discovering extra-terrestrial life carries with it the possibility of back-contamination of the earth with some dangerous organism, even though quarantive precautions are planned.

NATIONAL VALUES

The Plurality of Value Systems

No section of this study has been fraught with more difficult problems of analysis and prediction than this one. One dividend of the size and complexity of background of the American population has been a confused and often paradoxical value orientation. As the population becomes more homogeneous and more urbanized, more consistent value patterns may emerge; but this is by no means certain. In a fundamental sense, a plurality of values and value systems is the hall-mark of political democracy of the American variety.

Projections

But with these disclaimers, certain projections in the field of values are warranted.

1. Materialism and Social Obligation - In 1985 Americans will value material goods and the benefits of economic security as much as they do today. There will not be a marked increase in the

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sense of social obligation on the part of the majority of citizens. But as a result of extended education and more leisure time, the "saving remnant" of socially-responsible citizens will have increased in size and will have enhanced the incidence of active political participation and voluntary civic service. For the readily employable, full-time military service will continue to be viewed as a distasteful chore to be avoided if possible; but reserve service will be viewed as patriotic and profitable "moonlighting." On the other hand, a substantially-reduced industrial labor force will make many people -- especially young people not readily absorbable into the civilian economy -- more willing to accept the disciplines of military service in exchange for income, social status, and security -- the alternatives being social roles with less meaning and reduced income (welfare payments, prolonged education and retraining programs, civilian conservation corps, public works, etc.) In such cases, the educational and training opportunities of the military will be valued as stepping stones to more secure and well-paying civilian jobs.

2. Education - Education at all levels will be more highly-valued and sought after than at present, and by 1985 will represent the largest single investment of total public funds in the United States. Even with

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this massive increase in public investment, higher education will continue to be a substantial expense for private citizens -- opening up possibilities of selected inducements by industry, foundations, and government agencies in the form of fellowships, scholarships, deferred loans, and indentures to attract able young people into specific occupations, professions, and services.

Teaching machines and programmed education will have a far larger place in formal education at all levels, and in informal adult education. Computers will substantially simplify data storage and information retrieval, and will permit highly-dispersed facsimile reproduction of research data held by a grid of central research libraries.

3. Cultural Renaissance - As a result of increased leisure time and of educational and organizational interest in stimulating creativity, by 1985, America will be in the middle of a dramatic cultural renaissance in such fields as music, drama, handicrafts, and the plastic arts. The cost of videotape equipment will have dropped to the point where home television will be widely used for showing rented tapes (marketed, perhaps, through supermarkets) on an almost endless variety of subjects. An entire industry will have developed around the preparation, processing, and

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marketing of these home tapes which will range in subject matter from entertainment to formal instruction to cultural enrichment. Communication feed-back systems and closed-circuit TV lines will open up forum and seminar opportunities sponsored by urban schools and universities for home-based adult education.

4. Effect of Affluence and Leisure Time - These developments, encouraged by affluence and leisure-time, will be accompanied by a steady increase in public time and attention to travel, recreation, and do-it-yourself activities. Interest in sports and in publicly-regulated wagering will have increased substantially.

5. Crime - Crime, especially including juvenile offenses, will continue to be a major concern to urban America, but job training and employment guidance will play an even greater role in youth-serving efforts. A national system of criminological data storage and retrieval will have been established enabling more effective police control and crime prevention. Greatly improved programs of community indexing and servicing of citizen needs and pathologies will have been achieved.

6. Equality - By 1985, after many unhappy experiences, the American Negro will have won his basic constitutional rights; but prejudice

will still exist and will be reflected in subtle types of discrimination -- especially in the fields of housing and various forms of social activity. Negroes will constitute a majority of the population of several core cities in our major metropolitan areas; but they also will have moved widely into fairly autonomous sections of middle-class suburbia. Opportunities for heightened upward-mobility for Negroes in politics, sports, service trades, the arts, and the professions will have established fundamental status cleavages between middle and upper-class Negroes on the one hand, and lower-class Negroes on the other.

7. Government as Surrogate for Conscience - The general affluence of the population will keep the majority from identifying empathetically and continuously with the poor and the under-privileged at home and abroad. But sensitive professionals will keep calling attention to the persisting and increasingly significant "culture of poverty," and will look to political leadership as a surrogate for private conscience and charity. Various forms of hidden and indirect taxation will permit governments "to operate at least with intermittent effectiveness in areas where the public's felt personal needs do not propel the policy-making machinery."

8. Religion and Ethics - In the realm of spiritual values, fundamentalist-type orthodox theologies will have slipped even further in their hold upon belief and behavior, even though organizational and ceremonial functions will continue to elicit public interest and respect and religious yearnings will continue to be an important human phenomenon. Humanistic and prudential ethics will be as powerful as religious ethics in molding most public and private behavior. Sex mores, for example, will be governed more by psychic (including moral) disutilities than by fears of pregnancy, social censure, or fears of eternal damnation.

While Americans will continue to struggle fitfully for meaning in life, the majority will also have a cafeteria of transient escapes from the inevitable paradoxes of existence.

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### THE NATIONAL POLITY

In 1985, the general political goals of the United States will continue to be those stated in the Preamble to the Constitution. In pursuit of these goals the American governmental and political system will look overall much as it does today. A constitutional democracy based upon separation of powers and federalism will still exist. Elections will be held at prescribed and regular intervals. Two parties will still dominate the political scene. Civil freedoms and liberties will continue to be widespread. Group interests will continue to compete for power and favors; but no single group will have become so dominant as to limit, unduly, effective discretion by responsible political leaders in their attempts to determine the public interest. Governments, at all levels, will have grown in size and functions and will command a larger percentage of GNP and national manpower resources than at present. American diplomacy and defense will continue to work through both unilateral and multilateral channels.

Continuity and Change

Beneath these evidences of American institutional continuity, however, profound and subtle changes will have occurred. The most important of these will be the following:

The National Government

1. President and Congress - Presidential and Congressional views of the national interest will have become more consonant--partly through marginal realignments of the two parties, partly through the dictates of increasingly complex policy decisions in which Congress--even with more expert legislative steps--will defer to "management."

2. Role of Congress - Congress, nevertheless, will still have a powerful role in delaying policy proposals, in compromising differences within the executive branch, in investigating executive branch activities, and in making appropriations decisions which then, as now, will be marginal and incremental rather than dramatic.

3. Executive Initiative - Major policy innovations and segmental national plans will be developed increasingly by the Presidential office, in step with more long-range planning in all departments

and agencies of government and in cooperation with the major power sectors of the private economy.

4. Foreign Policy - United States foreign policy will continue to be the major item of attention of the President's agenda over the next two decades, increasingly demanding better planning, swifter and more accurate intelligence, and a creative coordination of all the agencies of government, including the armed services, to implement policy decisions. Both bilateral and multilateral techniques, including friendly ententes, regional organizations, and outright alliances will be utilized to maintain peace, with the United Nations available to the United States as a forum in which to point up special issues, develop international opinion, and rally international cooperation for economic assistance or limited policing functions of troubled areas.

The major challenges to United States foreign policy will continue to be the Soviet Union and China, but the scenes of action will lie everywhere--in Europe, Asia, Latin America, and Africa. We assume there will be no cataclysmic war. But trade problems in Europe, frontier warfare in Asia, subversion in Latin America, or political instability

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in Africa will require an infusive American diplomacy, a range of measures for negotiating issues in which every agency of the United States government, including the military, can have a share.

Diplomatic persuasion or threat will have to avail itself of all the economic, ideological, and military tools at its command, far beyond the traditional devices of the Department of State, and it will have to employ an equally flexible system of support from other nations or groups of nations as political circumstances may dictate.

5. National Security Planning - Operations research and program planning functions in the offices of the Secretary of Defense and the Chairman of the Joint Chiefs of Staff will have expanded significantly, and will be more tightly related through the Executive Office of the President of the diplomatic, economic, informational, intelligence, space, atomic energy, educational, health, and R and D functions of the United States government as a whole.

6. Long-range Financing - The need for longer-range planning by all executive departments and agencies will have induced changes in the authorization and appropriations functions of Congress-- permitting more predictable and longer-range financing of government programs.

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7. Congressional Staffs - Congress will be equipped with more expert and larger staffs, and the impact of professional staffs upon political judgment will be significantly greater.

8. Impacted Area Planning - The phasing in and out of federal government activity which has a high impact upon the economies of local areas will be rationalized by advisory staffs in the executive office of the President--closely related to the Council of Economic Advisors, the Budget Bureau, and the Office of Science and Technology--or their successors. These staffs may be matched by a joint committee of the Congress which could be one of the major power centers in the legislative branch.

9. Industrial Location and Scientific Allocation - Through contractual, fiscal, tax, and credit devices, the federal government will increase its influence over the location of industry, over the distribution of scarce talents in science and technology, and over the direction of R and D activities.

10. Domestic Poverty - Federal departments related to labor, education, welfare, health, commerce, defense, recreation and

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resource conservation will have increased substantially their concern with problems of domestic poverty as well as domestic tranquility, and with providing meaningful social roles and leisure-time activities for those whose work schedules have been shortened or disrupted by automation.

11. New Departments - The executive branch of the federal government will include two, and possibly three, new departments reflecting heightened public concern with education, urban affairs, and cultural affairs.

12. Career Political Executives - Many department and agency positions presently occupied by short-term political executives will be occupied in 1985 by top-level career specialists who will have tenure in rank but not in specific positions. The need for continuity and expertness in several policy areas will push top career civil servants into assistant secretary positions. It is unlikely that military officers will move into political executive positions, but officer expertise will continue to have an important influence on civilian decisions.

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13. Executive Development Training - In-house and external resources for career executive development will be greatly expanded in all parts of the government. Research on problems of government management will have increased and in 1985 will have produced a marked effect on in-house and external management training.

14. Computer Displacements - Large blocs of federal personnel now concerned with routine clerical and middle-management tasks will have been dislocated by computer technology; but government services will increase to the point where most of those dislocated will be reabsorbed into a variety of supervisory, service, and planning tasks.

15. Military Officer Training - Separate services will continue to exist in the Department of Defense (a tribute to tradition, service alumni pressure, and factors of morale). But by 1985 many of the highest level general officers will have been trained through line, staff, and defense college duty assignments in the several services and as inter-service staff. This may well have been formalized by a general officer grade above the service level.

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16. Contracting Out - By 1985 "contracting out" of various government functions to industry, universities, and special institutes will have increased substantially. In addition to scientific R and D, various managerial, technical, and service activities of the government will be contracted out to persons and institutions having a collection of scarce skills not readily available inside the government itself.

17. Social Security Extensions - Price levels will have risen slowly but over two decades appreciably. The federal government may well subsidize private insurance and retirement funds, probably through the extension of the Social Security Act.

### State and Local Government and Intergovernmental Relations

1. Local Jurisdictions - There will not be any perceptible decrease in the number of formal governmental jurisdictions. By 1985, there will, however, be a transfer of certain functions from smaller to larger jurisdictions, and area-wide special districts or authorities will be created for the performance of specific functions.

Likely fields for this type of jurisdictional transfer will include: police, fire, welfare, education, and various utility services.

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2. Grants-in-Aid - Education, health, welfare, highways, water, transportation facilities, urban renewal, industrial retraining, recreation, and other large public services will be financed on an increasingly inter-governmental, grant-in-aid basis.

3. Central City Budgets - The budgets of central cities in large metropolitan areas will depend increasingly upon federal grants-in-aid.

4. Manpower - By 1985 all levels of government will find it easier to attract able manpower into the public service, although there will continue to be a competitive shortage in certain specialized skills such as those needed in science, technology and operations analysis.

### Politics and Pressures

1. More Competitive Political Parties - Political parties will be more competitive in all parts of the nation by 1985 with implications both for more frequent alternations in the Presidency, and fewer safe one-party states and districts in the Congress. In

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consequence, the power of the South, as well as the power of rural areas generally, in the Congress will have declined. It will mean a Congress more responsive to majority trends and opinions across the country, but fewer congressmen with unbroken records of reelection. This will inevitably have the effect of modifying the impact of traditional seniority practices in the committee system of Congress. The powers of individual congressmen and senators due to long tenure will have shifted toward congressional staffs.

### 2. National Committee Interest in Congressional Elections -

The national committees of the two parties will be more concerned with Congressional elections than they are presently. This will be both a corollary and a cause of what political scientists have identified as "the nationalization of American politics."

3. Public Financing of Campaigns - Substantial public money (through tax deductions and direct appropriations) will help finance national political campaigns, although private financing will still assume the major burden.

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4. Group Interests- Major group interests in the United States will continue to revolve around industry, labor, and agriculture--although selected professional and educational interest groups will increase in power and influence, and regional coalitions of traditionally-hostile interest groups will have increased. More specifically, regional and functional competition for federal resources will grow and by 1985 will pit local and regional coalitions of industry, labor, education, and politics against each other. These struggles will occupy a substantial portion of Congressional attention and they will be reflected in service and departmental controversies in the executive branch of the federal government.

## PART II

### THE WORLD IN 1985

#### THE INTERNATIONAL ECONOMY

##### Human and Physical Resources

###### Underdeveloped World

There is every reason to believe that the central theme of the world economy today, namely the conscious development of the poor nations of this earth toward higher standards of living, will continue to concern the United States twenty-one years from now. By 1985 the world will still be roughly divided into rich states and poor states, with nearly all the presently underdeveloped nations still experiencing relatively low standards of living by comparison with Anglo-America, Europe, (including the Soviet Union), Australia, New Zealand, South Africa, and Japan.

###### Population Explosion

A major reason for this cheerless prospect lies in the population explosion that has stricken the earth in the twentieth century, penalizing

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now and in the foreseeable future the underdeveloped countries despite any technological advances in the cultivation of food or increased industrial productivity. The world population is now roughly 3,000 million. By 1985 world population may easily reach 4,500 million, using a modest 2% annual growth rate. The greatest rates of increase in population, moreover, will be in the poor nations of the world.

Birth rates will remain high, despite the availability of contraceptive devices, and the elementary practice of public health measures will continue to reduce the death rate in underdeveloped areas of Latin America, Asia and Africa. Thus, the rapid increase of the population of the poor nations of the world will cruelly reduce any gains that can be made in their per capita income. With national populations growing each year anywhere from 2 1/2% to 3%, as they are now in such states as Guinea, Egypt, Malaysia, Brazil, India, Ghana, Algeria, Nicaragua, Pakistan, and others, something between 6% to 9% of their incomes would have to be saved and invested merely to maintain the present low per capita of income. Massive economic and technical assistance from the developed nations of the world either through bi-lateral or multilateral channels would be essential in order to make any substantial gains in

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the per capita income of the underdeveloped world. Between now and 1985, for internal political reasons in developed nations, the constant, large-scale economic and technical assistance of the magnitude required to raise dramatically the living standards of the underdeveloped areas will not be provided, although by present standards such assistance will be substantially greater.

### Food Production

Total world food production will be greatly increased in the next two decades by putting additional land under cultivation, by increasing the yield of land and animals, by improving crop varieties, and by more scientific exploitation of the resources of the seas. But the underdeveloped nations will continue to have difficulties in sustaining their people either from their own agricultural-animal products or by exchanging for food their minerals and manufactures with the developed states. At the present time major crop production in the developed areas of the world is more than twice per acre and three times per capita than in less developed areas. The disparity in animal protein production is five times. These gaps, which have become greater in recent years, will not be closed by 1985.

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### Sources of Energy

In 1985 the principal sources of energy will continue to be petroleum, natural gas, coal and lignite, oil shales, and tar. No one knows the potential resources of the world in coal, gas, and oil, but they are more than ample for the needs of the next twenty-one years despite the likelihood that energy consumption, measured in millions of metric tons of hard coal equivalents, will rise twice as fast as the world population. If the underdeveloped world is to move ahead economically it must obtain more energy; however, the United States, the U. S. S. R., China, and Europe account for more than 90% of the world's estimated recoverable resources of coal; and only four regions, a part of the Middle East, a part of Caribbean America, the United States, and the U. S. S. R. contain approximately 90% of the world's proved resources of oil. While new deposits may eventually be found, their cost of exploration and exploitation runs higher than underdeveloped countries can ordinarily afford, and it is extremely unlikely that the basic market patterns will be greatly altered in the short time of twenty-one years. As underdeveloped nations attempt to improve their economy, therefore, their fuel bills will rise, pressing hard against their already scant resources.

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### Nuclear Fuels

Nuclear fuels are expected to become economically competitive with fossil fuels in a few developed areas of the world by 1985. The major advantage of nuclear fuels to underdeveloped countries would be the virtual elimination of ocean transport costs (one pound of nuclear fuel fully consumed could be equal to three million pounds of coal) and the reduced need for expensive railroads or pipelines. However, a large industrial and commercial demand for power must be concentrated if nuclear power is to be produced at a reasonable cost, a condition not prevailing throughout most of the underdeveloped world, and the installation of nuclear power plants are now much more expensive than conventional power plants. In the next 21 years nuclear fuels will offer no panacea for the basic economic problems of the underdeveloped world, although they will be more wide-spread than at present.

### Mineral Resources

Despite the rising demand for iron, copper, lead, tin, or aluminum throughout the world over the next twenty-one years, by 1985 there will be no shortage in the total mineral resources of the world, although the

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distribution will be uneven and the price of utilization quite variable.

Since World War II many new discoveries of mineral deposits have been made in both the developed and underdeveloped countries of the world through the use of air-borne geophysical methods. The estimate of known iron reserves, for example, has risen at least sixty per cent in the last eight years. Some underdeveloped countries now count heavily upon their mineral exports for foreign exchange and others will improve their economic standing through the possession of new mineral reserves. But no spectacular advance in wealth will occur merely through the discovery and possession of mineral resources: mining, transporting, and marketing minerals usually require heavy capital investment and technical skills to meet competitive world prices. Moreover, an underdeveloped country that attempts to convert a portion of its ore to finished metal will ordinarily need mineral supplements and/or high energy. Iron ore, for example, not only requires limestone, but metallurgical coal which is scarce throughout most of Africa, Asia, and Latin America. To the extent that underdeveloped and developed countries can collaborate, whether through private or public enterprise, in exploiting the natural resources to be found in the underdeveloped countries, there will be a

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mutual gain, but from now until 1985 such partnerships will be erratic and discontinuous, more often subject to political whim than rational economic considerations.

In summary, taking into account the population explosion in the underdeveloped world, the inadequacy of food and mineral resources generally available to the poor nations, and the likelihood that nuclear energy will not be able to provide large quantities of cheap energy to them in the near future, the economic outlook for the future seems pessimistic. However, the picture of the world in 1985, despite the large pockets of poverty that will still exist, is far from grim. Indeed, by 1985 mass starvation, mass homelessness, and the rampant spread of diseases that have historically decimated entire populations will be generally eliminated. Although the underdeveloped countries will still be comparatively poor, they will have greater and more immediate access to world-wide transportation and communications systems and to the provision of drugs, medical care, food, shelter, and clothing through international assistance in the event of disaster. The surplus commodity production of the United States will be an important element in the feeding of underprivileged nations.

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### International Assistance and Planning

#### International Economic Assistance

By 1985 there will be an increasing flow of voluntary private assistance to the poor nations of the world through religious and philanthropic institutions; there will also be a larger allocation of public funds from Europe, Anglo-America, and other developed areas of the world for emergency relief, grants, or soft loans in the underdeveloped world, as well as five to ten fold expansion of technical assistance programs, including international education and training. Economic assistance will continue to be given or loaned through national, regional, or international agencies. Today only a small part of the total of economic assistance to underdeveloped areas from Europe or the United States goes through international institutions. The United States, for example, has transferred only about one billion dollars as a subscription to four international capital lending agencies and it contributes less than \$200 million per year for all United Nations economic-social activities. By 1985, substantially more economic assistance and social relief will be channeled through international banks, international funds, and inter-

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national agencies, although national public and private programs will still account for the major part of gifts, grants, or loans to the underdeveloped world.

### Regional Economic Unions

Few political frontiers between nations will be abolished by mutual agreements for federations in the next twenty-one years. But in some regions of the world, boundaries will become less of an obstacle to the movement of people, money, and goods. By 1985 Western Europe will be a free-trade area. National boundaries will provide legal, administrative, and cultural divisions, but general economic policies will be subject to the European Community's political decisions. Other areas that will lend themselves to economic cooperation and common services will be West Africa, East Africa, the Middle East, Southeast Asia and Central America, but by 1985, very little economic advance will be obtained by regional economic unions in the underdeveloped areas due to their weakness in transport and communications, their similarity of products, and their political rivalries.

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### Public International Planning and Regulation

Tariffs, quotas, licenses, and other devices for protecting the local industries of a nation will still be used twenty-one years hence and immigration will continue to be regulated. Nevertheless, by 1985 there will be an impressive expansion of public international planning and regulation through the United Nations and its affiliated agencies, as follows:

1. International Commodity Agreements - to stabilize the world food prices to provide for the orderly production and marketing of crops and fibres, including commodity loans, credits, and soil conservations grants, and to insure against agricultural disasters and famines.
2. International Transport and Communications Agreements - to improve the safety of travel, the availability of service to all people, and the elimination of noxious practices in the common use of the seas, the air, or space for transport and communications.
3. International Health Regulations - including the standardization of international hygienic practices and records, the pooling of drugs, and medicine for concerted international action, and the development of international teaching-research centers.

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4. International Protection - of patents and copyrights, hours of work, and conditions of labor, the employment of women and children and the standardization of selected professional degrees, diplomas, and certificates.

5. International Finance - including the greater use of international banks and funds by governments, public agencies, and private entrepreneurs, for economic development, as well as monetary arrangements designed to provide foreign exchange on a long range basis, (rather than a short range one as at present), and to guide national fiscal policies from the extravagances of political pressures.

6. International Education - including the proliferation of multinational schools, institutes, and training programs under international auspices, with a greatly expanded exchange of students, teachers, and educational materials through international programs.

The facility of transportation and communications around the world in the next generation, even without any major technical innovation, will allow a greatly expanded continuous program of international planning for the world economy. Long distance telephoning will be cheap; visual confrontation by leaders, experts, and specialists through

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television across thousands of miles for conferences and discussions will be easy; and the physical movement of people and goods from one continent to another will be accomplished in a fraction of the time that is required today.

### International Staffs

By 1985 several permanent international agencies, with information, economic, and social development functions will be active in virtually every state of the world. Their international staffs and programs will be much larger than they are at present and they will be coordinated through a single representative or a secretariat responsible to the United Nations.

While the underdeveloped countries will make little or no progress in closing the real per capita income gap between themselves and the developed areas of the world, their standards of living will be higher due to the extraordinary agricultural, industrial and energy productivity of the developed countries, which will be redistributed out of ethical and political considerations through a variety of bi-lateral and international channels in order to avoid the grossest forms of mass poverty, ignorance

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and disease. International trade and international exchange will also tend to diversify the output of some of the more progressive underdeveloped nations. The shifts in comparative advantages will be marked and on the whole will have a beneficial effect on the developing world.

THE INTERNATIONAL SOCIETY

International society is the broadest classification of the activities of mankind, including both economic and political pursuits. The utility of this encompassing title lies in an analysis of the large movements of contemporary civilization, whether physical or spiritual, which by their inexorable force seem likely to condition the choice of institutions twenty-one years hence to reach policy goals. By 1985 international society will be a bigger society, a more densely populated society, a society more tightly articulated by communications, transport, and the exchange of information, goods, and persons. Primitive societies, cut off from the mainstream of human development, like remote Indian or African tribes, Eskimos, or islanders of the South Pacific will be adapting to the modernization process or disappearing.

People

Structure of Population

The tremendous increase in the population of the world between now and the next generation has already been noted. By 1985 the world

society will be darker in complexion, more youthful in age structure, more concentrated in cities, and much more mobile.

The great increases in world population are taking place in China, India, Pakistan, Egypt, some countries of Africa, and in those parts of Latin America where Indians or Negroes comprise a substantial percentage of the population. Conversely the rates of increase of population for the Soviet Union and the United States are about 60% and those for Europe about 30% of the underdeveloped world. Plainly the population pyramid of the world will spread at the base, with infants and teen-agers saved from infections and nutritional perils by the spread of public health services to childbirth and early child care.

### Urbanization

Urbanization, the large scale movement of people off the farms and out of the villages has already had a profound effect in the developed areas of the world, leading to great cities, megalopoli, like London, New York, or Tokyo, and to conurbations, a string or a circle of towns and cities in densely populated areas, linked to each other by a huge industrial, commercial, and recreational complex.

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Twenty-one years will not witness a wholesale depopulation of farms and countryside throughout the world, for today from 60 to 80% of the population in many underdeveloped areas are still rooted in agriculture. But by 1985 many more people of the world will live in cities than now. Cairo, Calcutta, Algiers, Lagos, Caracas, Singapore, and Sao Paulo, to name a few urban centers, will continue their rapid expansion up to 10 to 20 million inhabitants in their metropolitan areas. Their physical resources, their transport and communications system, their health and education facilities, and their employment problems will be strained to intolerable political limits.

### Family Life

With urbanization will come family dislocations and disintegration, as well as the slow crumbling of conservative rural traditions. The beehive cities and their satellites will increasingly set the cultural styles, generate the dynamic aspirations and needs of the nation, and tend to monopolize both scientific and managerial talent. The whole society of the world will be more mobile in both the transportation of goods and persons, and the transmission of ideas.

Technology

Transportation

The congestion of traffic will inevitably demand more public and more rational controls. Faster planes of supersonic speed, aircraft with vertical takeoffs, better roads and automobile traffic management, a greater employment of pipelines and conveyor belts, some use of rivers and bays for transportation, and high-speed rail systems integrated with trucking will circulate people and cargoes more rapidly and more safely.

Cheaper and faster transport, in brief, will be available to larger numbers of people throughout the world. International travel for people in the developed areas will be commonplace; transport costs for establishing and managing overseas operations will be lowered; far-flung tourist travel, coupled to longer vacations and more international education and research, will lead to wider searches for recreational facilities and the development of leisure attractions, particularly in underdeveloped areas.

Very large numbers of people of all nationalities will cross frontiers, gradually eroding particularistic cultures, accumulating

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and transfusing new ideas and new habits rapidly from one part of the earth to another. By 1985 all cities of the world will have much in common in their housing, transport, internal communication patterns, educational forms, marketing habits, information processing, and recreational facilities.

### Communications

Messages, decisions, and commands will move even more quickly both within nations and across the globe than at present. Telephone service will be universally available by 1985. Direct telephone dialing to all continents will be available: in the developed countries some individuals and many organizations will make use of video-aural communication through a television-telephone combination. Aside from neighborhood newspapers, the local press throughout the world will gradually be replaced by national and international newspapers with wire facsimile reproduction and world-wide radio-television networks, abetted by satellite relay communications systems. By 1985 distance will be no excuse for delayed information from any part of the world to the powerful urban nerve centers that will mark the major concentration of people on earth.

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The sensitivity of the world's nervous system to a rapid input and output of energies and information, however, will make it more sensitive to any interruptions or breakdowns. By 1985 whole nations will be thrown off-balance by interrupted transportation-communication relays unless they have developed shunting systems or duplicate facilities.

### Automation

Within the next two decades automation and the use of computers will have had a dramatic effect upon the developed areas of Anglo-America, Western Europe, the Soviet Union, and Japan. Electronic components and equipment will become smaller, cheaper, lighter, and more compact than they are today. In most underdeveloped areas today simple data are slowly, painfully, and inadequately collected, analyzed, stored and retrieved by individuals. As the scientific processing of information will be underway in the urban centers of Asia, Africa, and Latin America by 1985, large numbers of clerks, runners, sorters, and filers, that today account for the weight of public and private bureaucracy in India, Nigeria, or Brazil will begin to be threatened with displacement and the insecurities of unemployment. Unless other economic and

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educational challenges are devised to absorb their limited talents, they will add to the social problems of cities that already cannot peacefully accommodate a scantily-educated proletariat.

### Systems Operations

Managers of complex and widespread systems, such as dispersed military forces, linked raw-material and factory operations, chains of commercial outlets, world-wide investment banks, even branches of schools and research institutes, will be aided by computers, both in their headquarters and their regional offices. Executives will be able to obtain instantaneous and detailed information about the systems in which they operate, and they will be able both to exert a more direct influence upon such wide-spread systems than they presently exercise and reassess the effects of their actions. This will make possible greater decentralization of operations within large-scale organizations. By 1985 there will be an excessive demand throughout the developed world for systems analysis experts, executive personnel of consummate managerial skill, and technicians for the design, production, installation, and maintenance of such systems. By 1985 the underdeveloped world

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will begin to compete in earnest for the same kind of talents through a far-flung net of international recruitment.

Systems operations, however, will never become completely mechanical, for all systems have built-in value-structures. Such values are human values, not machine values. It will always take men to design the priorities and relevances within a system. Machines can do just about anything, and better than men, too, but only when - (a) human agreement on the data of the input is reached, (b) the behavioral requirements of the machine are carefully defined, and (c) consensus exists on the meaning of the output.

By 1985 the world will have an increasing need for millions of men and women capable of understanding and interpreting data processing, predictive models, and quickly assembled information, as well as many hundreds of thousands of men and women who have the imagination for the creation of new systems, the courage for denying or remolding old systems, and strong ethical norms to guide their skillful use of machines.

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### Values

#### Values and Religion

The use of the resources of nature has always been partly conditioned by prevailing moral and esthetic considerations. Economic determinism that would seek a single causative factor for men's behavior is false, although the organization of the means of production clearly puts an imprint upon the ordering of society and its values. The value of the world of 1985 will be more materialistic, more secular, and more oriented to the comforts of the body than the peace of the soul. Urbanism and the western idea of progress linked to rising economic expectations will profoundly affect the youth of the underdeveloped world who will run headlong into teeming cities of great wealth and stark poverty with low ethical standards. The youthfulness of the world population will be a constant source of social strains, outbreaks, and upsets.

While the great world religions of Judaism, Christianity, Islam, Hinduism, and Buddhism will have about the same proportion of the population, their moral prescripts will continue to yield in the urban areas to pragmatism. Ritual and status, rather than profound conviction

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in the supernatural, will increasingly identify religious denominations, but they will continue to be an important political and social force in nearly all states of the world. Ecumenical movements will have very limited success, chiefly affecting church organizations rather than engendering any spiritual rebirth. Church approval, however, may strengthen and provide the ideas for secular concern with welfare. Religion will be a legitimating factor in personal, national, and international policies of aid and tension reduction.

### Pacifism and Violence

The acquisitive societies will continue to be aggressive societies. Rising expectations, almost by definition, will mean rising frustrations and the resort by individuals or groups to radical solutions. New forms for the control or manipulation of large numbers of people against their will are unlikely, with only slight advances, mainly in the medical treatment of individuals, to be expected from hypnosis, drugs, sensory isolation, or brain stimulation. Police, prisons, and other correctional institutions will be larger and busier, but so will mental health care facilities, sanitarium, and rest homes.

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Pacifism and non-violence movements will gain few real converts by 1985, although organized non-violent tactics for limited political gains may be widely used. Depending largely upon the political skills of government, however, the urban masses in 1985, despite under-employment and disillusionment about economic progress, will find compensation in the excitement and entertainment of city life, especially if supported by an easy distributive system of cheap food. Throughout the world the cultural limitations upon women in public life, industrial and commercial employment, in education, arts and scientific research, even in military or para-military organizations, will be lowered to permit ever-increasing options to females.

### Political Ideologies

Ideologies like democracy or communism will still command the loyalties of men twenty-one years hence, but all ideologies will be interpreted differently with the march of invention and experience. By 1985 democracy in many parts of the world will be equated with a free press, due process of law, and certain personal liberties rather than requiring an alternating party system, regular elections to parliaments, and a

free-enterprise economy; similarly, communism will not be equated with the Soviet Union or necessarily modelled on the Russian economy and political organization, but will only be indicative of a revolutionary, dictatorial government purporting to organize systematically all resources for the swiftest possible economic and social progress in the names of Marx and Lenin.

In many areas of the world military forces will dictate the nature and operation of governments. To the extent that foreign military officers are educated or influenced in the concepts and goals of democracy, especially through training in the United States or by close association with American military officers, governments under their control will have a popular and responsible orientation.

#### Internationalism

#### Scientific Research

Throughout the world in the next twenty-one years there will be a rapid rise in the number of scientists and in scientific research. While the United States, Western Europe, and the Soviet Union are reaching a saturation point in the number of intelligent people and the

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amount of money that can be devoted to "science" without a gross distortion of their economies and a disruption of social values, several underdeveloped nations, particularly China, will have a much larger proportion of their population and their gross national product involved in science by 1985. Science will become more internationalized, with scientists of all nationalities either moving or commuting to the best centers of their specialty regardless of geographical locations. Invisible colleges of scientists, using rapid, cheap travel and direct telephonic-television devices will collaborate on special projects or common research problems, thousands of miles apart and regardless of national frontiers. International journals and scientific extracts will be systematically gathered and digested for transmission to the world-wide "community" of interested scientists.

### International Contracts

By 1985 there will also be larger "communities" of international businessmen, scholars, military officers, professional persons, and public officials. Their interests and communications with each other will span national boundaries regularly, their opinions will be more

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influenced by international events, than local affairs, and their efforts will be more focused upon solving international problems than upon domestic issues.

### Languages

English will continue to be the most widely used international language, with Spanish rising and French falling. Chinese will be spoken by more human beings than any other tongue; Arabic will remain vigorous, and other national languages like Hindi, Swahili, and Hausa will be strengthened in their local areas.

### Internationalism

Rapid travel, easy telephone service, audio-visual confrontation across great distances will tend to build networks of people with different nationalities, but having common interests, reading the same kind of news, involved in the same kind of problems, and developing a public international opinion that will gain a hearing both in national politics and international organizations. Internationalism will be an ascendant ideology by 1985, a faith in the utilization of international agencies to maintain peace, ensure economic advancement and protect human rights around the earth.

THE INTERNATIONAL POLITY

The power of nations in the world has always been shaped by a complex of military, economic, and ideological forces. Only the briefest blink at history will expose the monumental ignorance of men in estimating the power of other peoples. During the 1930's France was considered to have the greatest military force in the world; Japan believed that it would over-run and exploit China with ease; the Soviet Union was ridiculed as a weak state with mechanical failures and military incompetence; Great Britain and the United States, with virtually no armies and mass unemployment appeared decadent, soft, and yielding to an arrogant Germany; and every political expert figured that it would take fifty or a hundred years for black Africa to govern itself.

The Power System

Predictions About Political Power

Prognostications about world power are fraught with peril, especially since military, economic, and ideological forces contain dynamic elements that catalyze each other. But in retrospect, it is

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possible to see why the superficial impressions of the 1930's were inaccurate. The relative population and economic resources of France in the world had clearly been declining since the nineteenth century; China had never been incorporated by alien forces, only loosely and indirectly governed; Russia had been a great power because of its size, population, potential resources, and discipline, regardless of Bolshevism; together Britain and the United States had almost monopolized seapower and had an industrial, energy, and agricultural base unmatched by the rest of the world; and the European penetration of east and west Africa had been brief and superficial, often expensive, and bound to generate a reaction both in Europe and Africa. Long, historic views of this kind are no guarantee of accuracy, but hopefully, they may correct short-run impressions and myopias. It is for this reason that they will be used in examining the power configuration of the world in 1985.

### The Superpowers

By 1985 the United States and the Union of Soviet Socialist Republics will still be the two single greatest military powers. The conduct of these giants, however, will be greatly conditioned by other

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clusters of military force around the globe: first, Western Europe, where the integration of national forces in a common command and defense will be achieved; second, the People's Republic of China, with Southeast Asian satellites; and third, Japan. In a much lower order of magnitude will be Egypt and the United Arab Republic in the Middle East, and Brazil in Latin America.

For any single state to match the United States and the Soviet Union in power, it must begin to approach their skills in weapons technology, particularly a mastery of atomic missiles and space, must be endowed with a broad economic base of agriculture, industry, and communications services, and must possess an internally-stable government capable of commanding the loyalty of the mass of people under stress.

### China

The People's Republic of China will continue to increase its military potential, but by 1985 China will not be a world power of the same magnitude as either the Soviet Union, Western Europe, or the United States of America. Within its own region, however, China will

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exercise increasing military weight, especially at its borders with Korea, Mongolia, Burma, Thailand, Laos, and Vietnam. By 1985 some or all of these states, and perhaps Cambodia and Malaysia will have fallen into the Chinese orbit, strongly influenced by or attached to Peking's policy. China will have great difficulty in raising ordinary standards of living because of its tremendous population pressure, but its human energies will be enormous and its use of science and technology will leap forward. On the world scene the diplomatic stature of China will be greatly improved. It will gradually accommodate itself to negotiation and agreement as an equal with other states, a practice completely new to China, whether imperial or communist. By 1985 the People's Republic of China will hold an important place in the councils of the United Nations and be marginally contributing to international organizations.

The relations between China and Japan will grow closer. Trade and commercial agreements, tourist travel, educational exchange, and technical training will be arranged, but their political lives will be distinct, sometimes cordial, sometimes cool, but quite independent.

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Japan will continue to be an energetic, prosperous nation, aggressively seeking markets for its products, particularly in Southeast Asia, but not to the point of military adventure against China or any of her neighbors.

### The United States and Western Europe

The United States and Western Europe will continue to move closer in their economic and ideological associations, utilizing an increasing number of international boards, commissions, and other agencies for their common economic, social, and legal interests. By 1985, however, there will be no political union between Western Europe and the United States. Western Europe will tend to be an accomplice in the foreign policy of the United States, but often Western Europe will restrain, modify, or even contradict American plans. Western Europe will not be submissive to the United States, but she will not be hostile.

### The Communist Bloc

To some extent the same phenomenon of independent and poly-centric orientation will be apparent among the communist states of the world twenty-one years hence. The Soviet Union no longer has a monopoly on the ideology of communism. Russia, China, Yugoslavia, and Cuba

can and do differ today on ways and means in both foreign and domestic policy, although each claims to be a staunch disciple of Marx and Lenin. Other states may become Marxist-Leninist in their slogans with communism as their goal, but as their physical distance from the Soviet Union or China increases they will be more likely to follow their own national methods and their own leadership under the banner of communism rather than any dictation from Moscow or Peking. Between now and 1985 communist states, including Eastern Europe, will increase their ties of trade, communications, and other exchanges with Western Europe, America, Latin America and Africa, enabling them to pursue a peaceful co-existence with the non-communist world and to realize a partial freedom in their own affairs from the monolithic dictation and organization of the Soviet Union. But the political links of any communist states bordering the U. S. S. R. and/or China will not be severed by 1985 unless their governments are forcibly overthrown. Such revolutions can only succeed with the assistance of formidable outside forces, using continuous subversive tactics coupled, as may be appropriate, to interventions and outright assaults.

As the Soviet Union continues to increase its wealth, stabilize its society, and more clearly recognize the absolute destruction of its

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way of life if world-wide atomic warfare should be started, it will dampen its revolutionary fervor, calculate the risks of foreign subversion and civil war more coldly, and be more willing to compromise crucial issues with the western powers. It will not give up revolutionary slogans, stop its denunciations of western policy, or fail to exploit every weakness of the West in Asia, Africa, or Latin America, as it fishes politically in all troubled waters. But Russia will become less radical and less irresponsible in allowing conflicts to reach a point of no-return where the ultimate weapon must be employed. The successors to Khrushchev will still be Communists and the Soviet Union will still be governed by one Party under state capitalism in 1985, with no internal revolution. A somewhat wider sphere of "freedom" may be granted paternalistically to the people in economic, social, and legal matters by the government, but the only political changes of importance will lie in the greater latitude of expression allowed within the closed circles of the party organization.

The ruling Communist party of China will go through internal troubles over the next twenty years, leading to important revisions of domestic policy and intermittent purges of both party leadership and

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rank-and-file members. By 1985, however, the Communist party will still govern China with a strong hand. Neither local rebellion nor foreign invasion from Taiwan or elsewhere will be a threat to its command. Despite obvious failures of the communist system to realize its slogans in China, and desultory armed border struggles, the Party will be securely in the saddle of a highly-centralized government.

### Indonesia

Indonesia is a good candidate for takeover by a Socialist-Communist government. But by 1985 it will not be a satellite of either China or the Soviet Union; instead, it will be governed by a strong one-party dictatorship with military support, modernizing but not eliminating Islam. Its economic progress will be very slow, but central control over Sumatra, the Celebes, and Borneo will be strengthened. Any territorial expansion will be blocked by Malaysia, China, the Philippines, and Australia.

### Latin America

In Latin America, Brazil will be by far the greatest power in 1985, especially if it can overcome its endemic disease of unstable

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governments and maladministration. Like Brazil, the southern tier of Latin America, including Chile, Peru, and Argentina will not be dominated by foreign investment nor fear foreign intervention, holding to a neutral or friendly course to the United States. Many Latin American states will move closer to socialism, though they will not be allied with communist states, and they will undergo great economic reforms with popular upheavals. Caribbean America, including Venezuela, Central America and the islands from Trinidad to Cuba will continue from now to 1985 to be politically volatile, with insurrections, border disputes, and natural disasters aggravated by an extraordinary rapid growth of population, poverty, ignorance, and low ethical standards of government and public administration. Between now and 1985 there will be many attempts at political subversion in Latin America, some led by internal Communist groups in a common-front with liberals and moderates, some supported by elements based in adjacent countries, and some receiving leadership, supplies, military equipment, and so forth, from either the Soviet Union or China. For the most part the causes of subversion will be local, due to economic protest, social inequality, and political tyranny, but they will quickly develop into international issues involving the United States.

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By 1985 the Latin American states will have a small number of trade and commercial agreements with communist states. There will be no American, Russian, or Chinese-dominated land bases in the Caribbean or Central American states, but there will be a continuing struggle for ideological leadership, marked by changes of governments, economic assistance agreements, and hostile propaganda.

### The Arab World

Over the next 21 years, Northern Africa and the Middle East will continue to be politically volatile, pressed by population growth, overdrawn economic programs, demands for social reforms, and the instabilities of government. By 1985 the Arab world will not be reconciled with Israel and the drive for Arab unity, spearheaded by Egypt, will have mixed successes and failures, accompanied by border warfare and insurrections from Morocco and Algeria to Iraq, Saudi Arabia, and Yemen. Both India and Pakistan will continue to be troubled by internal difficulties and border problems, but neither will become an expansive power.

Central and South Africa

The only military force of any consequence in black Africa today is Ethiopia. By 1985 there will be no great military power on the Continent. Political federations among the many small states of Africa will have little success, for in the opening words of the Emperor of Ethiopia to the African leaders at the historical Addis Ababa Conference in May 1963,

While we agree that the ultimate destiny of this continent lies in political union, we must recognize that the obstacles to be overcome in its achievement are numerous and formidable.

Border warfare, insurrections, and civil disturbances, again complicated by agrarian ignorance and poverty, urban unemployment, tribal discriminations, and low ethical standards of government and public administration, will be fairly commonplace in Africa over the next twenty-one years. By 1985 there will be no European colonies in Africa, although there will be close ties to European trade, financial institutions, and education, as well as some economic and academic or training connections with the United States and the U. S. S. R. , China, and the communist orbits. The political strains for South Africa, both internally and externally, will increase rapidly in the next years, marked by frontier

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conflicts, subversion, and international pressures, leading to a fundamental revision of its internal government and foreign policy by 1985.

White South Africans will continue to dominate the state and by 1985

South Africa will still be the wealthiest area of the Continent.

### The Polar Regions

The polar regions will be of no greater significance in 1985 than they are at present. Navigation under the north pole and across the north pole will be slightly increased. The recent Antarctica Treaty, suspending all territorial claims, and demilitarizing the continent, has set a strong pattern of international relations for the future in that area.

### Conflict and Conflict Resolution

#### Nationalism and Imperialism

In 1985 nationalism will continue to be the most important terminal political loyalty for most people. It will become increasingly difficult for any state to maintain foreign bases under its flag due to the intense nationalism of new countries and political controversies in older countries. Indeed, United States' bases not situated on American territory will be

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virtually eliminated. The employment of force by any state to reach its political goals will be far more sophisticated in 1985 than at present: a delicately ascending scale of psychological, economic, and military techniques will be utilized to crack the morale, disrupt the livelihood, and enervate the power of any potential enemy. Long before the use of martial weapons or the shuttling of troops, hostile or potentially hostile states will bring into play diplomatic pressures, propaganda assaults, the subversion of opinion, high-level intelligence penetration, tampering with food, communications, and fiscal operations, boycotts, blockades, civil disturbances, and border encroachments, all without war or the appearance of war. The urban centers of the world will be the most dangerous hotbeds of ambition, frustration, and conflict, placing a premium upon knowledge of techniques for controlling and pacifying cities.

### Nuclear Warfare

The greatest danger to the world in 1985 will be the escalation of conflict between small states, either peripheral to or supported by great states, leading to nuclear warfare. The United States, the Soviet Union, the United Kingdom and France are already nuclear powers, though by no means equal in strength; by 1985 Japan, China, India,

Israel, and several other states of the world will have nuclear weapons, either by their own manufacture or by the purchase of materials. Up to now the speed of the spread of nuclear weapons for sovereign use has not been rapid. Both the Soviet Union and the United States have followed policies to prevent the emergence of other nuclear powers, while other states, with the capacity to manufacture nuclear weapons, such as Belgium, Canada, Italy, and Sweden, have not rushed to do so. Nevertheless, for reasons of insecurity, prestige, or military economy, a dozen or more nations will have nuclear weapons in their arsenals by 1985.

The possession of nuclear weapons by a state obviously does not make it militarily equal with every other nuclear power. The number and quality of the weapons, the explosive force, the delivery system, the ability to make a second-strike retaliation are among the many factors that will continue to differentiate the United States and the Soviet Union from the rest of the world. Nuclear weapons by themselves will not alter the large scales of international power in 1985, but in troubled areas they will threaten a quick escalation of conflict, and will thereby force a quicker international reaction for peaceful accommodation.

Civil defense measures as such will make little progress, but governments

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could indirectly encourage dispersal of facilities and deep cellar construction by both private and public agencies through economic incentives and subsidies.

### Mastery of Space

More research will be put into delivery systems and their interception than into the increase of explosive force by the great nuclear powers over the next twenty-one years. The mastery of space as a new medium for communications and the delivery of great explosive power will be pursued intensively and at great cost by the developed world between now and 1985, leading to a network of military and civilian communications satellites, military surveillance satellites, orbiting space stations with men, and moon base.

### Selective Disarmament

Selective disarmament will take place by international agreement over the next twenty-one years, but no major nation will abandon its most efficient and economical means of self-defense. Selective disarmament will affect some aspects of the national economy, including the use of manpower, as the demand for weapons and supplies changes; it will also affect the organization of military units. But a world without large and expensive national armaments cannot be expected in the foreseeable future.

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### International Conflict

Because the escalation of a conflict may lead to a cataclysmic global destruction with atomic weapons, the world community by 1985, working through the United Nations, regional organizations, and bilateral accords, will use better techniques and more resourcefulness in moderating or muffling international conflict. First, several national political matters that are now considered essentially domestic affairs will be brought before the world forum; there will be an instant and public airing of contentious issues likely to lead to violence; and antagonists will be quickly drawn into confrontation through mediatory conferences and quiet diplomacy with neutrals. Second, international economic and social resources will be quickly mobilized to soothe felt needs for capital, supplies, and technical assistance before tempers are strained to the breaking point. The United Nations system or regional organizations will begin to offer guarantees and compensation for boundary adjustments, population displacements, and other losses to national economic and social rights conditioned by a peaceful legal or political settlement. Third, a series of physical interpositions between potential belligerents will be made by the permanent representatives of the United

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Nations in the field, by special panels or commissions from UN headquarters on order of the Security Council, or by United Nations forces themselves.

### United Nations

By 1985, there will be a small standing United Nations force composed of national contingents under a permanent UN command, constantly and immediately available from their sovereign nations for UN police activities anywhere in the world. The United Nations will not become a world government in the next twenty-one years. It will continue to reflect, as an organization, the power of the world, and it will prove effective in its undertakings so long as it does reflect the real power of the world. Neither the United States nor the U. S. S. R. by 1985 will be physically coerced by the weaker states of the United Nations; nor will the developed areas be forced, against their will, to give economic aid to the underdeveloped areas; but neither the strong nor the wealthy will be able to flee from the opinion of mankind in the United Nations.

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### Foreign Policies and the United Nations

The foreign policies of all states will be increasingly conditioned over the next twenty-one years by the attitudes of both regional international organizations like the Organization of American States and the United Nations. Governments will make use of international organizations when they seem advantageous to national interests, but seek to avoid them when they impede or obstruct national purposes. By 1985 it will be impossible to keep any international political issue out of the discussions of the United Nations, partly because of the resources and personnel that will be available to the system, including all its affiliated agencies, and partly because of its vital importance to the whole community in preventing violence.

### Growth of the United Nations

The United Nations system alone is now spending about one-half billion dollars annually, with some 35,000 employees. Predictions about the expansion of the international organization and its affiliates depend largely upon peace-keeping activities, which are costly, but there will also be a greatly increased channelling of economic and social assist-

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ance through multilateral organizations. By 1985 the United Nations System will be spending at least two billion dollars a year and engage at least 100,000 persons.

All national governments and their agencies will have to take a larger account of international organizations in their planning and operations. Departments of agriculture, health, education, labor, and defense will require better information about international agencies, while their staffs will need more access to and experience with international agencies in order to coordinate their activities in a systematic and cooperative way. The exchange of personnel between the United Nations and its members will engender a spirit of internationalism and cooperation which will affect the public administration of the member states.

### International Law

National states and national governments will still control the largest part of their citizens' daily economic and social activity, and they will continue to maintain his immediate defense. But by 1985 the average man's security will depend far more than it does today upon an array of international and regional facilities to avoid conflict, and his

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ordinary life will be deeply permeated with the manifold activities of international organizations that will affect his legal rights, economic standards, and social behavior.

There will be no single world law made by a legislature over the next decades, but states will increasingly agree by treaties upon minimum human rights and specific regulations for trade, employment, and finance. States will confer special functions, with immunities from national jurisdiction, upon international agencies of all types. Most international law will still be interpreted and applied by national courts in 1985, but the activities of the International Court of Justice will increase through its interpretation of treaties. New regional international courts will also be established and the litigation of international organizations will grow, but by 1985 individuals, outside of Western Europe will rarely have recourse to international tribunals to protect their rights against arbitrary acts of states.

**SOME IMPLICATIONS OF THE PREDICTIONS  
IN THIS REPORT  
FOR THE UNITED STATES MARINE CORPS**

The profile of the world of 1985 sketched in this report has a number of immediate implications for the future recruitment, education, career development, and role definition of the United States Marine Corps. Many other implications cannot, of course, be sensed by non-military men outside the Marine Corps. But at least a few obvious ones may be high-lighted for attention and discussion in the three following groups.

Group I: The Nature of the Conflict

IMPLICATION 1: The Urbanization of Conflict. (See pp. 87-88, 112)

The growing urbanization of the world, and projected civil unrest in many foreign urban centers -- especially in developing nations -- suggests that the Marine Corps must develop both combat and civil affairs teams especially equipped to deal with subversive and revolutionary urban conflict. This implies far more than combat operations in the traditional sense. It implies a knowledge of key elements of transportation, logistics, communications, utilities, governments, and other systems which can be both disrupted and organized for purposes of control. Capacity to handle subversive and revolutionary urban conflict may well be to 1985 what capacity to mount amphibious and jungle operations was to World War II.

The commandant of the Marine Corps should consider the advisability of reviewing the state of Marine Corps intelligence, operations, and training in the field of foreign urban conflict.

IMPLICATION 2: The Internationalization of "Police" Functions  
(See pp. 116-117)

Localized foreign disorders of a subversive or revolutionary nature in 1985 will call for skills in the maintenance of order which place

relatively higher reliance upon knowledge of techniques for integrating American with international and foreign military, policy, and administrative activity. These multi-national peace-keeping functions will frequently mean soldiers without enemies.

The Marine Corps in cooperation with selected consultants should consider the exploration and sponsorship of research in the use of international institutions to maintain order and should experiment with simulation exercises in multi-national operations and in non-hostile military actions. The latter has obvious implications for the psychological conditioning and training of soldiers.

IMPLICATION 3: Military Services and National Disasters (See p. 79)

Whether or not disarmament causes a shift of military energies to civilian-type functions, specialized, highly-mobile, disciplined units drawn from the armed and civilian forces of developed nations -- and often under international command -- will increasingly be used to answer problems of famine, epidemic, disease, and natural disasters the world around.

The Marine Corps might well consider the establishment of a special, experimental unit (perhaps with a non-military uniform) trained to meet the health, food, shelter, transportation, and communications problems of selected civil disasters. Such a unit should include or should have immediately available to it, language specialists, area specialists, and public health experts. Liaison officers or observers to appropriate branches of the United Nations, the International Red Cross, and other humanitarian, international organizations should be appointed.

IMPLICATION 4: The Military in Civilian Governments Abroad  
(See pp. 96-97)

In many nations of the world, domestic military forces will continue to exert substantial political power and influence in 1985. The capacity of these military juntas to move their nations toward democratic and/or economically-just social systems will depend in part upon the advice they receive from military consultants from the United States.

The Marine Corps, and other military services, should work even more closely with the Department of State in developing a doctrine of civilian governance and economic and social development which can be transmitted by our military advisers to the military leaders of de-

veloping nations and which will help the latter to move their respective nations in the direction of orderly and just social change in the interests of their people, and of our long-range national security.

**IMPLICATION 5: Insurgency and Counter-Insurgency** (See pp.104-109)

Since the problems of insurgency and counter-insurgency will continue to occupy the attention of many allies and neutrals in 1985, the Marine Corps should redouble its efforts in this difficult, para-military field. This implies the creation, or upgrading, of language and area schools; para-military training and "teacher-training" institutes; and courses in ideology, communications, and what O. S. S. used to refer to in World War II as "morale operations," or what Mao tze-Tung refers to as "Political Operations."

**IMPLICATION 6: The Phasing-out of Foreign Bases** (See p.109, 111)

National sensitivities will make it increasingly difficult for long-term American bases to be located on foreign soil. This will place an even higher premium than at present upon long-range, highly-mobile forces capable of independent and sustained action. Defense exercises in moving operational units over long distances and in developing logistic,

communication, and transportation networks which will depend minimally upon fixed and U. S. manned establishments in other nations should continue to demand high priority.

IMPLICATION 7: The Uncertainties of Selective Disarmament

(See pp.112-113)

The job of the Marine Corps is to be ready for anything. Is the Marine Corps ready for selective disarmament? 1985 will still see a great deal of mistrust in the world, but experiments in selective disarmament may well have resulted from international diplomacy. Consideration should be given to non-military functions at home and abroad which the Marine Corps could undertake in order to keep alive skills and organizational patterns needed for rapid functional reconversions to military operations if the latter becomes necessary.

## Group II: Organization and Specialization

### IMPLICATION 1: The Growing Complexity of Organizations.

(See pp. 41-44, 90-93)

The growing complexity of organizations and the growing interrelationships among the military services, between military and civilian functions, and between this nation and other nations, suggest the need for the Marine Corps to develop a series of in-house and external educational programs which will equip future officers to deal intelligently with these developments. Continued service identity will be possible only if officer ranks are sensitive to, and capable of dealing with, these new relevancies and interdependencies. For example, at higher officer ranks, negotiating and bargaining skills will most certainly be as important as command skills in the world of 1985.

Consultants might well be hired to help the Marine Corps in structuring officer development training in the management of complex systems and in developing skills of negotiation, bargaining, and effective committee work.

**IMPLICATION 2: Changing Doctrines of Military Command.**

(See pp. 26-27, 41-44, 63-65)

The growing professionalization of the military services and the rapid advancing and changing technology of military operations require fundamental reconsideration of present doctrines of military "command" and top level management. Although military organizations have traditionally led the world in developing concepts of organization, discipline, and staff operations, military management will tend to fall increasingly behind the newer and more flexible concepts in other fields.

The Marine Corps should consider (a) initiating a "no holds barred" research program into the managerial aspects of the major Marine Corps operations of the past, with the history of such operations reinterpreted in the light of modern operations analysis; (b) initiating a detailed simulation of the major command problems in various types of future operations, and (c) reviewing its field officer training activities in the light of such research and of responsible criticism by modern management analysts.

**IMPLICATION 3: The Increase in Long-range Planning.**

(See pp. 64-66, 80-82)

The probability is that by 1985, all departments and agencies of the federal government will be mandated by the President and the Congress to engage in far more long-range planning. "Whiz kids" skilled in operations research and long-range planning should be hired and cultivated as necessary future adjuncts to top command functions in the Marine Corps; and all officer ranks should be given increased training in these technical skills.

**IMPLICATION 4: Organizational Decentralization.**

(See pp. 41-44)

Radical improvements in communications, transportation, and management theories suggest the probability of a much higher degree of organizational decentralization than exists at present in all large-scale enterprises. Paradoxically, this greater decentralization will be made possible by instruments of communications and control traditionally associated with greater centralization. Operational decentralization will be dictated by the need for military dispersal and for "efficient units" of organization.

The Marine Corps might review at one or two-year intervals the possibilities of decentralizing its operations in the United States and of linking career Marines more closely to Marine Corps Reserve Units.

IMPLICATION 5: The Power of Congressional Staffs. (See pp. 65-66, 70-72)

Congress will be equipped with more expert and larger staffs, and the impact of professional staffs upon political judgments will be significantly greater. Because of basic changes in our political life, individual congressmen will have less certain tenure. In consequence, some of the powers associated with continuity will have shifted towards congressional staffs and away from individual congressmen and senators like Carl Vinson or Walter George.

All parts of the Defense Department, including the Marine Corps, should pay special attention to harmonious working relations with relevant congressional staff on long-range and highly technical problems.

IMPLICATION 6: Career Specialists as Political Executives  
(see pp. 67-68)

Many department and agency positions presently occupied by short-term political executives will be occupied in 1985 by top-level career specialists who will have tenure in rank but not in specific positions. Military officers will not hold such positions, but the civilian contingent in the Department of Defense (and drawn from other departments) will.

The Marine Corps should take special pains over the years to see that junior executive types in the civilian services of the Department of Defense and in other key departments and agencies like State and C. I. A. are exposed to formal mid-career training and to informal briefings on the roles and capacities of the Marine Corps.

### Group III: Manpower Utilization

#### IMPLICATION 1: The Competition for Scarce Manpower.

(See pp. 26-27, 45-46, 91-93)

The relative shortage of highly-trained manpower in such fields as science, technology, and the more complex professions, will develop an increasingly acute competition for scarce talent. In the Marine Corps' exploration of alternative means of protecting its interests as this manpower competition develops, special attention should be paid to the possibility of identifying potential manpower talent early (say in High School), and of promoting Marine Corps fellowships for higher education on an "indenture" basis: i. e., fellowship loans, a percentage of which are "forgiven" for each year beyond post-graduate education served in the Marine Corps by a fellowship holder. It is probable that the Marine Corps can be successful in this competition for scarce talent only if it supplements its present recruiting image of "tough readiness" with an image of "intellectual and professional challenge."

IMPLICATION 2: Reduced Civilian Work Schedules. (See pp.26-28)

The labor force in 1985 will work a greatly reduced schedule of hours. The Marine Corps should watch this development carefully and should be prepared to negotiate with industry, labor unions, universities, and the professions in developing "man-power-sharing" and "moonlighting" schedules for Marine reserves.

IMPLICATION 3: The Extension of "Contracting Out." (See p.69)

"Contracting out" by government agencies of special functions and of R and D activities, will have increased substantially by 1985. The Marine Corps should reexamine all of its present activities to discover which lend themselves best to a "contracting out" system. The spectrum of possibilities should include such traditionally in-house functions as food preparation, warehousing, and materials handling.

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