APPENDICES

commission on the ORGANIZATION of the government FOR the conduct of FOREIGN POLICY

June, 1975

(IN SEVEN VOLUMES)

[volume I]

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Foreword

The Commission on the Organization of the Government for the Conduct of Foreign Policy has benefited greatly from the studies and analytic papers submitted to it by scholars and experts in various fields. Many of these contributions are published in this and companion volumes as appendices to the Commission Report. They are made available to the public in the hope they may stimulate further discussion and analysis of these difficult issues of government organization to meet new needs. The views expressed, however, are the authors' own; they should not be construed to reflect the views of the Commission or any agency of the government, either Executive or Congressional. The views of the Commission itself are contained solely in its own Report.

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Appendix A: Foreign Policy for the Future

Introduction

Appendix A contains a series of papers designed collectively to assess the future world environment in which U.S. foreign policy will be conducted. The papers by Zbigniew Brzezinski, Robert R. Bowie, and McGeorge Bundy are revisions of statements made before the Commission. Peter L. Szanton's paper, one of a number of preliminary studies designed to guide the Commission's Studies Program, presents a synthesis of points made in the three other papers and in a conference on this subject held under the auspices of the Commission.

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The Future World Environment: Near-Term Problems for U.S. Foreign Policy

Peter L. Szanton
June 1974

PREFACE

Critics of military planning have remarked that in time of peace generals prepare to win the previous war. Critics of diplomacy have added that in time of peace diplomats attempt to avoid the previous war. Criticism of commissions on government organization is less well developed, but it may well find commissions too tempted to fix on the past.

Hoping to avoid that temptation, and to propose organizational structures appropriate to the problems of the next decade rather than of the last, this Commission has heard several witnesses and considered a number of papers addressed to the probable world environment of the near future and the problems for American foreign policy which it might pose. Among these papers are: (1) Statement of McGeorge Bundy before the Commission, June 1973; (2) Statement of Zbigniew Brzezinski before the Commission, June 25, 1973; Testimony of Herman Kahn, June 25, 1973; Paper of Robert Bowie, March 27, 1974; and discussion digest of a Conference on the Future World Environment held under the Commission's auspices on April 27, 1974.*

Copies of each of these documents are available to any commissioner, staff member or consultant to the Commission. Since their combined bulk is considerable, however, it seems useful to make available a more summary outline of possible futures. Such an outline is presented here, in three parts. The first presents a compressed characterization of several possible economic, political and strategic futures; it is based on a paper prepared by Nathaniel McKitterick, consultant to Commissioner Englehard. The second describes what might be termed a "plausible worst case". Based on a memorandum I prepared in early May 1974, it suggests how unfavorable economic developments, which a number of commentators regard as likely, might produce a world economic and political situation posing sharp difficulties for the conduct of U.S. foreign policy. The third is a lightly edited version of the concluding portion of the paper by Robert Bowie referred to above. It presents what might be regarded as "the most nearly agreed" future, outlining the underlying attributes of the alternative futures which many observers have posed, and suggesting appropriate U.S. responses.

It may be that, for purposes of the final report, the Commission will wish to have prepared a single statement of the most probable future environment, or of the most plausible alternative futures. This is not that paper. This document rather intends merely to present, in brief form, materials already available which may stimulate the thinking of commissioners, staff and consultants as to the shape of the future in which any new arrangements the Commission may recommend must operate.

PETER L. SZANTON
Research Director

*(Discussants were: David Apter, Francis M. Bator, Robert R. Bowie, Karl W. Deutsch, Samuel P. Huntington, Lawrence Krause, Franklin Lindsay, Abraham Lowenthal, Edwin O. Reischauer, Peter L. Szanton, Adam B. Ulam.)

I. SOME ALTERNATIVE FUTURES AND THEIR IMPLICATIONS

Some Economic Futures

After more than twenty years of nearly constant reductions in the cost of food and fuel relative to the costs of other things, both trends were reversed

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in 1973. The trend towards lower relative costs for food was reversed due to rapidly rising diet levels in Europe and Japan, leading to a sudden spurt in demand for U.S. farm exports. The actual price reversal was triggered by the large Russian wheat purchases in 1972.

The trend towards lower relative costs for fuel was reversed by rapidly increased dependence on Middle East oil which in turn reflected sharply rising demand in Europe, Japan and the United States. Quadrupling of prices by the oil exporting nations greatly accelerated a trend already in motion before the actual embargo took place.

Over-arching both of these key events has been a persistent and pervasive inflation in Europe, Japan and the United States.

As regards the conduct of foreign policy over the next ten years, what kinds of economic futures may these situations portend?

1) *A future in which the costs of food and fuel continue to rise relative to the costs of other things.* Consequences: increased and intensified dependence of Europe and Japan on external sources of fuel, especially from the Middle East, coupled with a rapidly growing financial dependence on the United States for balance of payments support; a re-establishment of the dollar as the world's major reserve and trading currency; danger of dramatic rates of inflation, followed by serious unemployment, particularly in Europe; increased monopolistic power for some LDC's (Arab states, Iran, Nigeria, Indonesia, etc.); increased dependence on foreign aid for other LDC's (India, Sri Lanka, Bangladesh, Sudan, etc.); efforts of the United States to drastically reduce its dependence on foreign sources of raw material, especially petroleum.

2) *A future in which the relative costs of fuel continue to rise, but the relative costs of food either stabilize or again decline under U.S. surpluses.* Consequences: U.S. farm exports become major instruments of U.S. foreign policy; some increase in dependence of Europe and Japan as above; return of foreign aid as a means of moving U.S. farm surpluses; strong pressure in the United States to recentralize farm policy; inflationary pressures as above.

3) *A future in which food and fuel costs stabilize or again decline relative to the costs of other things.* Consequences: the costs pushing inflation are primarily wages and salaries; foreign trade issues are increasingly seen as domestic economic issues as well; trade wars tend to increase while foreign aid, except for food aid, declines or disappears; the dollar declines as a reserve currency and faces more competition as a trading currency; inflation-born nationalism makes international cooperation more difficult; "dirty" floats in the money market and non-tariff barriers to trade proliferate; the U.S. begins to experience labor shortages; the import of lower wage foreign workers increases.

Some Political Futures

The dominance of economic "news" in the early 1970's tended to mask the importance of political developments, except in the Middle East and in the new relationship between the U.S. and the U.S.S.R. Unusually weak governments ruled in all major Western powers and Japan. China was on the brink of a generational change in leadership.

Again as regards the conduct of foreign policy over the next ten years, what kinds of political futures do these situations portend?

1) *A future in which the new, inflation-born nationalism flourishes in Europe, Japan and the United States.* Consequences: Foreign policy in all these countries declines as a focus of public and political interest; a new hedonism dominates domestic politics; power continues to flow to central governments, with possibility of corporate states in Italy and France; Japan finds its world role with no close alliances with either the U.S., Russia or China; militarism dominates all African governments, but Latin America continues to experiment with democracy from time to time, perhaps succeeding somewhere; the Third World idea tends to degenerate as more and more LDC's become part of big power spheres of influence; European unity remains a distant goal.

2) *A future in which Russian and/or Chinese relations with the West become recontaminated with ideology and confrontation replaces detente.* Consequences: U.S. hegemony over Europe re-established even more firmly than implied in the economic projections; Japan becomes object of courtship by big powers, both Atlantic cooperation and European unity promoted by need to renew common defense; internal security a major problem in Italy and France; Rapallo theme emerges in German politics; Third World under pressure to choose up sides, with danger of serious big power confrontations there increased.

3) *A future in which the confrontation between Russia and China, possibly involving limited armed clashes, dominates world politics.* Consequences: U.S. follows nationalistic, hemisphere-oriented policy with deepening involvement in Latin American politics; Japanese-U.S. relations turn better; Europe tends to become more a peninsula than a power; Soviet extends hegemony in the Middle East, while China dominates Southeast Asia, makes headway in Africa and makes trouble in India. Both Soviets and Chinese court multinational corporations; Chinese sponsorship of Third World changes character of that idea.

Some Strategic Futures

For the first time in ten years Secretary of Defense Schlesinger is forcing a new debate over strategic doctrine in the United States. The form and shape of that debate has yet to take shape, but involved is a rejection of Mutual and Assured Destruction as the prime basis of strategic doctrine.

At the other end of the military scale the final extrication of U.S. forces from Viet Nam was accompanied by a firm resolve, "never again." But strategic policy cannot ignore small wars any more than big ones.

The strategic situation is exceptionally fluid for the first time since World War II. Again as regards the conduct of foreign policy over the next ten years what kind of strategic future does this fluid situation portend?

1) *A future in which, in the name of arms control, strategic nuclear weapons are sharply limited while the line between tactical nuclear and conventional weapons is progressively blurred.* Consequences: NATO is revived at least temporarily as credibility of European defense increases; European unity furthered, but not necessarily Atlantic cooperation once new U.S. weapons technology is absorbed; chances of Soviet pre-emptive strike against China, and of war between western and communist powers becomes less remote as possibility of limiting damage to civilian population increases (world is made "safe for war"); arms control negotiations become multilateral.

2) *A future in which war becomes a major instrument of policy in countries of the Third World.* Consequences: While a direct Soviet-U.S. military confrontation in a third country remains a remote possibility, military confrontations between and within Third World countries are a high probability; despite Viet Nam experience, some U.S. interventions occur, most likely in Caribbean, possibly in Latin America; interventions involve military units of 40,000 or larger, resembling occupation armies; militarization of India occurs as result of collapse of Indian democracy under the weight of the food/population crisis, leading to India aggression against Pakistan and perhaps some oil states.

II. A PLAUSIBLY DIFFICULT ENVIRONMENT

The scenario which follows suggests a quite difficult environment for U.S. foreign policy-making without invoking the specters of a reversal of detente, or severe Sino-Soviet tensions, or large-scale war. The force driving this sequence of events is simply inflation.

The World Environment

1. *Economies in Trouble.* The historic upward trend of basic commodity prices—interrupted during the past half-century by an unusual period of relative price stability—is likely to resume—indeed it has already done so. In the cases of food and non-renewable resources the price rises, as in oil, may be steep. The inflationary effect of this development will be compounded by a rapid world-wide rise in wage levels, the rising costs and enlarging scope of social welfare programs, and the "internalization" of previous external costs (e.g. pollution).

2. *Social Structures Under Pressure.* These developments exert great pressure on virtually all governments. In a number of countries whose social fabric is weak or whose economies are fragile, these pressures will prove overwhelming. Even in politically stronger and economically better balanced nations, however, governments are likely to be unable to prevent steady and possibly sharp declines in real personal income. The basic problem will be that the economies of all but the most primitive states are interdependent; they are therefore not subject to control by national governments. But national governments will still be held responsible by their people for the maintenance of conditions still regarded as normal: low unemployment and rising real wage levels.

3. *Results.* Over the mid-range and beyond (10–25 years), painful adjustments will be made. These may include starvation in some regions, "revolutions of declining expectations" in others, and the acceptance everywhere of lower rates of return to human resources and higher rates of return to material resources. These are developments which would change balances of power and wealth both within nations and between them. Alternatively, radical new technologies may succeed in increasing supplies and controlling costs. Over the shorter range, however, and before such adjustments had been made, the probable results are severe disorder in the vulnerable countries (those dependent on imports of both food and energy, for example) and, even in the more resilient societies a rapid turnover of governments, and movement toward "primordial" and nationalistic politics like those of the 1930's. Corporatist political philosophies and autarchic economic policies—intended to export the more severe economic problems—would appear. Given the tightening interdependence of national economies, however, the result of such policies would be to shift and worsen the problems, not to solve them.

4. *Situation of the U.S.* Self-sufficient in food and nearly so in energy, the U.S. would be in a rela-

tively strong position in such a world. That strength may be self-reinforcing, moreover, since most of the newly wealthy resource-rich states will be unable to absorb fully their own new revenues and, of the developed countries, the U.S. may well appear the safest for substantial investment.

In a world thus tempted by beggar-thy-neighbor economic policies, the U.S. will wish to exercise constructive leadership. Given its probable relative strength, the U.S. will have the physical and financial resources to back such leadership.

Implications for the Conduct of U.S. Foreign Policy

1. *The foreign-domestic policy distinction nearly disappears.* From the point of view of U.S. decision-making, the most important implication may be that the distinction between foreign and domestic policy, eroding for 50 years, may virtually disappear. As to all major economic, monetary, and budgetary decisions, there will inevitably be important foreign policy implications; and vice versa.

2. *Unpleasant decisions.* The necessity to factor international considerations into all major decisions will be painful; those considerations will almost uniformly suggest the acceptance of immediate costs in return for the promise of longer-term benefits. U.S. officials most sensitive to world needs will find themselves advocating policies whose short-term effects, for example, will be increases in domestic price levels (through rejection, for example, of export controls), increases in U.S. tax and public expenditure levels (to fund substantial foreign aid programs once again), and the ceding of elements of national sovereignty to international entities which alone will be able to make and monitor the necessary decisions concerning world allocation and control of population, food, non-renewable resources, oceans, and the like.

In a time of internal prosperity, such measures might be readily accepted. But, if the more likely prospect is stagflation coupled with popular resentment of the instability and nationalistic policies of the other major states, their acceptance is far harder. This is a most unattractive environment for responsible elected officials. It may be even more unattractive for officials of foreign affairs-oriented agencies, forced steadily to advocate unpopular policies.

3. *Inadequate machinery.* In addition to having difficult and unattractive decisions to make, we are likely to have inadequate machinery to make them with. Existing staffs, procedures and habits will not be sufficient either to identify and assess the foreign affairs implications of previously domestic decisions, or to represent "foreign" interests fully in the decision process. Moreover the larger number of U.S. actions having effects overseas, and the larger number of decisions taken by foreign governments having major impact here will put greater pressure on our capacity to anticipate the consequences of alternative policies, and to develop responses in advance—a capacity already regarded as inadequate.

4. *Pressures on the Presidency.* Presidential leadership will be taxed to the utmost. Conflicting claims of foreign and domestic interests, inevitably cutting across agency lines, cannot be resolved by the agencies; resolution can only come at the White House level. And only the presidency can initiate the necessary restructuring of decision machinery.

5. *The Importance of Public Opinion.* Public opinion will assume greater importance. Public attitudes will place tighter constraints on the courses which officials sensitive to foreign needs will urge. This, in turn, suggests another role for the President: leadership in developing general national acceptance of the self-discipline and moderate sacrifices likely to be necessary to support an internationally responsible policy.

6. *Congressional Response.* Congressional difficulties in accepting such sacrifices will be severe. They may be somewhat easier for Senators than for Congressmen; it may be useful therefore to think separately about the responsibilities of the two bodies. But for both, the notion that politics stops at the waters' edge will be dead—or more precisely, meaningless.

III. A "MOST NEARLY AGREED" FUTURE

The view of the future which most nearly reflects a consensus among the various commentators is that which follows. It contains many of the underlying characteristics of the projection offered in the preceding section, but is not dominated by the problem of world inflation.

The features of the probable future which appear especially critical for defining the tasks of U.S. foreign policy are these.

1. *The most pervasive factor in shaping international affairs in the coming decades will be the growing interdependence* of societies and nations and their reactions to that interdependence. Separate states, even the largest, will not be able to meet their basic needs for well-being independently or to

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insulate their societies and economies from external influences and forces.

2. It follows that *the capacity to shape significant events will depend on collaboration* among states. That is the practical meaning of interdependence. In building a viable system of collaboration, the U.S. will have a key role by reason of its resources and influence.

3. *The requisite cooperation must inevitably include a wide range of other nations,* depending on the problem being addressed. For some purposes, such as controlling conflict or regulating or reducing armaments, it must involve adversaries. For others, including global problems like the oceans, and many economic matters, the LDCs must join for effective measures. Cooperation will have to be especially intimate, extensive and continuous, however, among the advanced nations of Western Europe, Japan, and North America. With economies and societies so closely meshed, they will have to concert their actions in many fields, including security, the monetary system, trade, economic policy, investments, as well as initiative will also be essential in global resource problems.

4. *The required collaboration will have to take many forms.* In some cases, the need will be to concert domestic or external actions among interested states. In others, it may be necessary to form new agencies, or to strengthen existing ones in order to regulate or carry on activities on a regional or global scale. In any case, such joint programs and agencies wili often require long-term commitments among the participating states so as to assure continuity of operation and support.

5. *Such intimate cooperation will be inherently difficult,* especially for the democratic states. The matters involved directly affect the daily life and well-being of the average citizen through prices, wages and jobs. These issues are the core of domestic politics, on which democratic governments stand or fall. Thus the necessity to coordinate internal policy-making and administration closely and continuously with other nations or external agencies poses severe problems.

6. *Compounding the difficulty will be the weakness or instability of governments* or confusion about their purposes over the decades ahead. Social and political tensions will profoundly modify the institutions and outlook of the major states. The USSR will be subject to growing pressures at home and in Eastern Europe. The European Community may move toward greater unity and to a new role, or it may stagnate in fragmented passivity or weakness. Japan will be faced with hard choices about both its domestic priorities and its relations with the outside world. Among the LDCs, some will be achieving growth and social progress, others stagnating or suffering severe instability. China after Mao is unpredictable. The turnover in governments everywhere is likely to be unusually rapid. Creating a cooperative, interdependent order would be a formidable task under the best conditions. It will certainly demand leadership and organization of very high quality under circumstances like these.

7. In this perspective, *the tasks of U.S. foreign policy in the coming decades will be two-fold: to help build the processes and institutions for world collaboration* and order, and *to foster the evolution of the major states in ways conducive to a cooperative order.* While the U.S. can clearly not assure these aims alone, the way it uses its resources and prospects will greatly affect their prospects.

8. In order *to undertake those tasks successfully, U.S. policy-making will have to embody two features* not easy to combine: (a) *clear direction and continuity over time;* and (b) *extensive participation.*

9. *The leadership must come from the President but these tasks cannot be performed as solos.* The President stands at the intersection of all the various strands which must be integrated. He ultimately speaks for and represents the nation in its dealings with the outside world. He alone has the political stature in domestic affairs to obtain the concurrence of Congress and the electorate for necessary decisions. His role is, therefore, central. But what he can do directly is severely limited. The critical problem is how to extend his reach by utilizing and organizing the efforts of others. To do so will require the reversal of the increasing tendency over the last decade to concentrate the making and executing of policy into a few hands.

10. *Foreign policy will have to be based on a coherent strategy or framework widely understood and supported.* Such a strategy would not attempt to blueprint specific actions for the future, but to set general directions, to identify longer-term purposes and objectives, and to define priorities to be followed in day-to-day actions. Such a strategy is essential for at least three reasons:

(a) A cooperative international order can be built only by the cumulative effect of many actions over an extended period. Specific actions can contribute to that result only if they reinforce each other over time; that is, if they have reasonable consistency or coherence. Such consistency requires some guiding sense of direction and priorities.

(b) In domestic politics, the Executive and Congress will not be able to resist or reject the claims of specific groups, when necessary, if they cannot justify and explain their action by reference to basic purposes which enjoy general support. Such agreed purposes are not a

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substitute for strong political leadership, but they can facilitate it.

(c) Such a strategy is also essential as a basis for joint action with other democratic nations. Their leaders will not be ready to use their political capital to obtain support for the joint course, often at the expense of parochial or short-term interests, unless they can count on similar action by their partners in other states. A shared strategy provides an element of continuity and predictability essential for such joint action.

The International Community in the Next Two Decades

Zbigniew Brzezinski
June 1973

In this discussion, I am going to try to develop ideas about the kind of problems that American foreign policy will confront by the end of this decade and during the next. I will do so by stages, starting first with the longer-term implications of some of the contemporary events which will occupy our attention and then focusing on longer term considerations.

The task assigned to me was defined as involving an analysis—and I now quote from the mandate I received—of "the nature and dimension of changes that are going to take place in the international community and the kind of world we will be living in during the next two decades."

In other words, I take it my job is that of analysis and not of policy advocacy, though some policy implications will be inherent in my remarks.

To reduce this enormously complex and elusive subject to manageable proportions, I propose seven broad propositions concerning the next decade and a half or so, starting first with the more immediate and then using the more immediate as stepping stones to longer range perspectives.

The first proposition is that the new international order which has emerged in the course of the last half decade can best be understood in terms of two basic triangular relationships.

The first triangular relationship is still essentially an adversary triangular relationship, but it is one which is in the process of being *codified* and normalized. Here, obviously, I have in mind the American-Soviet-Chinese relationship.

The other principal triangular relationship which dominates the world scene is an essentially cooperative triangle which is increasingly subject to the strains and frictions of the new reality of *interdependence.*

The two key words here in this first proposition are codification and interdependence. The adversary relationship is being codified. By this I mean that we are seeing the appearance of an essentially mixed, competitive-cooperative relationship, which remains fundamentally an adversary one and in which security issues are still central and the elements of fear and mutual suspicion are strong. It is a relationship which is becoming more and more stable, and less and less unpredictable.

The thrust of the American-Soviet-Chinese relationship in the course of the last half decade has been toward establishing certain mutually accepted rules of the game. This is an amazing situation. Much of the Cold War involved conflict in which each side played by its own rules and, indeed, even kept its own score.

Now we are accepting, together with the Russians and Chinese, certain common rules of behavior. This is an important step towards codification and normalization.

In the cooperative triangle, we have frictions in large measure because interdependence has become a reality, and the frictions are the consequence of that interdependence. Units which heretofore were relatively separate and which did not share a close relationship, are now touching closely, and relationships have become much more interactive. For example, monetary and trade relations have increasingly greater impact on the domestic scene of the units concerned.

Similarly, a security interdependence causes frictions because all three units recognize their security interdependence but find it extremely difficult to define the nature of the burden-sharing. Conflict over this issue feeds back also into the other relationships and creates a pattern of friction which dominates the relationship.

Nonetheless, I wish to emphasize that I view this relationship as essentially one of interdependence and not one of conflict. This is a very important distinction. The frictions in the American-Japanese-European relationship are essentially frictions which arise as a consequence of the new interdependence.

The second proposition which I would like to put to you is that the two major triangular relationships

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are fundamentally unstable, and major, even dramatic, changes may take place in them. To wit, in the adversary relationship which is becoming more stable and more codified, there are a large number of inherently unstable elements. The question of succession in China poses the question of China's future political orientation as a major uncertainty.

There are continuing political tensions within the Soviet leadership. We know that the course on which Brezhnev has embarked has not been welcomed with unanimity by the Soviet leadership. We know that there is continuing factional conflict in that leadership, and there remains the possibility of reversal in Soviet policy itself. This possibility of policy reversal is enhanced by the fact that the Soviet leadership to this day is one of the very few major political systems in the world in which there are no regularized procedures of succession, and, hence, there is an element of uncertainty built into the very fabric of the system.

Beyond that, there are certain major systemic problems which confront the Soviet Union and which also produce elements of uncertainty. For one thing, it seems to me that we underestimate in this country the significance of the multi-national reality of the Soviet Union. We only too often forget that the Soviet Union is a country in which the Russians are roughly 50 percent of the population, and the other 50 percent involves reasonably homogenous nations which are beginning to acquire an intensifying sense of national identity and are beginning to acquire growing national aspirations. I do not for a minute wish to suggest that these non-Russian nations are at this stage secessionists, but they are demanding a larger share in the political and economic decision making in the Soviet Union. This is creating major problems and major uncertainties in the Soviet political system, creating greater complications.

Last but not least, the course of the Sino-Soviet relationship remains extremely uncertain. Two trends within China are now intersecting, both of which make the Soviet leadership especially concerned with the Sino-Soviet relationship. The first is the approaching struggle for succession with China, to which I made reference, which increases the Soviet tendency to try to influence domestic Chinese developments, and the second is the decision by the Chinese of hardened-sites and long-range missile capability, with increases of Soviet anxiety about the relationship with China.

The intersection of these trends creates an intense preoccupation in the Soviet Union with Sino-Soviet relationship, a preoccupation which has already shaped Soviet attitudes in world affairs and shall continue to do so in the future.

Similarly, the situation in the American-European-Japanese triangle is extremely uncertain. Fundamental reversals are less likely but should not be excluded. As the security danger on the world scene declines, one of the major sources of cement in the West European-American-Japanese relationship will begin to lose some of its importance. Moreover, there is the danger already that the Japanese and the Europeans feel the United States attaches a higher priority to the other relationship than to the relationship with them.

The intersection of both of these trends could make at some point for dramatic reversals in world affairs. If the process of the normalization and codification of adversary relationships continues and if in the course of the process of codification and normalization the security issue loses some of its importance in world affairs, then other issues, primarily economic frictions, as well as the interactive cultural and political tensions will become more important determinants of international conflict.

In that context, a fundamental change in the very pattern of international relations is not to be excluded. We could find a situation a decade from now in which our relations with either the Soviets or the Chinese, assuming there is no reversal in that relationship, are more stable, more predictable, and less pregnant with hostility than our relations with either the Europeans or the Japanese.

This, indeed, would be a fundamental reversal of world affairs, one which would undo the very thrust of much of American foreign policy since World War II.

Even short of such a fundamental change, intermediary though nonetheless important developments are not to be excluded. If American-Japanese relations continue in the present state of drift, and if this state of drift begins to interact with growing sources of instability in internal Japanese affairs, it is likely that Japan will be forced to re-examine fundamentally its own relationship with us and the rest of the world. An unsettled, unanchored Japan might become a very major source of international stability, with pressures for change in Japanese policies.

If Europe concludes that frictions on the monetary and trade level between Europe and America are no longer manageable, if America lacks the political will or the interest to attach highest priority to its relationships with the West, then it is likely that the temptation which is already strong within some European capitals for Europe to pursue a third way, and essentially a neutralist course, is likely to become dominant. It seems to me, that within certain European leaderships, and by this I do not mean exclusively the French, there is an increasing inclination to view both the Soviet Union and America as essentially equal dangers to the independence and interests of Europe. Hence,

there is a growing position to pursue a separate European course.

The consequences of that could be a major fragmentation of international affairs and a major impulse for American isolation.

The third proposition is that a central war in the foreseeable future is unlikely, but that accidental war is a possibility. A major central war, of the type we have become accustomed to seeing since the dawn of the industrial age, is now a luxury which only the poor and backward nations can afford. The advanced, powerful nations cannot attempt to undertake simple wars. This is a fundamental change in world affairs, dictated by changes in technology and means of warfare. Warfare now is literally a luxury which only the poorer nations can afford.

Nonetheless, accidental war of major proportions is possible because of the accumulation of weapons, their enormous complexity, dangers of communications breakdowns, all of the sort which have been described in an article in Foreign Affairs a half a year ago, by Mr. Iklé, who is now the head of ACDA.

Leaving aside these dangers involving the more powerful nations, the more basic fact of international affairs is that most of the rich nations and most of the powerful nations now exclude war as an instrument of force. War as an instrument of deliberate policy was still a major policy preoccupation of the rich and industrial nations as recently as approximately 20 or 25 years ago. This dimension is now largely absent, I would hypothesize, from our own planning about world affairs or from the Soviets or Chinese.

Violence is now likely to be sporadic and spasmodic, rather than systemic, whereas, for much of the age of international affairs in the industrial era, violence was systemic, an instrument of policy, deliberately planned and deliberately pursued. This is a very fundamental change.

The fourth proposition is that global differentiation intensifies the likelihood of major social political fragmentation in many parts of the world, notably in many parts of the third world. Here I would like to draw attention to two critical variables which seem to me to be extremely important, namely, the interaction between demographic growth and growth in popular consciousness. Demographic growth is imposing increasing strains on the political and social fabric of many parts of the third world.

It has been calculated that at the present rate of growth it would take approximately 70 years for the population of the United States to double. One can easily envisage the kind of social and political strains that are likely to be inflicted upon our institutions, our domestic policies, our way of life through such a doubling. It complicates enormously every facet of life in our society. It has been calculated that at the present rates of growth the French population will double in 99 years. Again, the same consequences will ensue.

West German population, at the present rates of growth, and these are subject to change, would double at the rate of approximately 340 years. I cite these figures to indicate that the problem is present, particularly in the United States, but it is a problem with a long lead time.

In contrast, in a country like India, however, with 585 million people, we will find its population doubling in 28 years. This is practically no longer a projection because existing birth rates are not likely to be fundamentally altered in that short a time span. In fact, much of this development is in the process of already occurring.

The population of China, with close to 800 million people, will double in 40 years. Much of South and Southeast Asia is likely to have its population doubled in a time span ranging from 20 to 30 years. Similar figures could be cited for parts of Latin America and Africa. Thus, in a relatively short period of time enormous strains on the social and political fabric of societies will be inflicted.

At the same time, growth in consciousness is also growing and growing even more rapidly. If one calculates (as I tried to do in my book, *Between Two Ages*) the rate of increase in literacy, in schooling, in newspapers, and in television, one finds that that rate is even more rapid than changes in demographic growth and far more rapid than changes in the objective conditions of social existence: that is to say, in per capita income, in housing facilities, in welfare amenities, and so forth.

I emphasize this point very strongly, for this is a fundamental reversal in the pattern of social change from our own experience and from the experience of Western Europe, when we industrialized and modernized. We and the West Europeans enjoyed a situation in which the objective material conditions of our people changed more rapidly than the way people perceived these changes. To put it more simply, the way people lived changed more rapidly than the way people think.

Today in the third world, the way people think is changing far more rapidly than the way people live. This, I believe, is an enormous political and social consequence. It makes for a condition of far greater dissatisfaction, greater volatility, and greater tension. For this reason, in my judgment, we are likely to perceive in the course of the next decade and a half increasing evidences of social and political disintegration, fragmentation and, indeed, even a collapse of organized entities. I would suggest that India is one nation most likely to suffer from major political and social calamities.

In that context, of course, certain basic problems

will become more acute. During the last two years it has been my judgment that the energy and environmental problem is likely to be followed very soon by a food problem, and this problem has already surfaced. I suspect it will impose increasing strains on the international system. It will have very special implications for the United States, because we are a major producer of food supplies, and I think it is going to cause a very major redefinition of global priorities in terms of the very conception of economic growth. Heretofore economic growth has focused on industrial growth.

It seems to me that it will be more and more essential that economies world-wide focus their attention very deliberately on the development of increasing food supplies. Unless this is done, there will be a very major global crisis.

The fifth proposition is that imperial zones will continue to fail, but their failing will create new international tensions, particularly in two sensitive areas. The first of these is Latin America. Here it seems to me one is justified in making the categorical judgment that American preponderance is ending. This has been an area of American preeminence. This has been an area where the United States enjoyed an imperial position. We no longer do and, as a consequence, international politics are entering Latin America on a large scale. Latin America is undergoing the same process of differentiation and interaction between different states that Europe and Asia have witnessed in recent years and that Africa is in the process of witnessing.

We already have a highly differentiated situation. States hostile to us are basing themselves on a variety of strategies: Cuba, a revolutionary communist orientation; Chile, a democratic, radical communist orientation; Argentina, a curious combination of Fascism and Marxism, resulting, if you will, in a kind of popular, populist, radicalism. All three, however, have one common denominator; namely, they are determined to drive the remnants of American influence out and with it to end foreign economic domination.

On the other hand, there are states with which we maintain a reasonably close working relationship, ranging from Brazil to Venezuela to Mexico, these three being in my judgment the focal points of our interest in Latin America, and each of them, too, has a different orientation.

I would add further that Brazil is likely to become and is in the process of becoming the central power in Latin America and likely the source of future Latin American hostilities. Brazil will replace the United States as the bogeyman of Latin America in the very near future. Hence, this element ought to be also an important consideration in the shaping of American relations to Latin American states.

Beyond that, we should expect the Soviet Union to become more active in Latin American affairs. Until now, the Soviet Union has been rather deferential to our sensitivity concerning Western Hemisphere affairs. Hence, Latin America in general is going to become the same kind of an object of international affairs as well as the subject of international affairs as Europe and the Far East have become in the course of years past.

The second major area of instability is likely to be Eastern Europe. This has been a major source of concern in the East-West relations, and this area still remains primarily a Soviet imperial zone. In my judgment, it is not likely to remain so indefinitely, and the pressures within that area are definitely in the direction of freeing itself from direct Soviet domination. This process, however, is not without its instabilities.

The situation in Yugoslavia is already highly unstable because of domestic national tensions, and there are problems of secession. This situation is likely to be rendered more unstable, since the internal conflict within Yugoslavia is likely to involve also the question of Yugoslavia's external orientation. Hence, Yugoslavia is liable to pose in a sharp focus again the question of the position of Eastern Europe in East-West relationships and of the Soviet role in that region.

Poland is equally uncertain, much depending on the economic stability in that region. But there is considerable evidence that the basic thrust of Polish domestic development is toward the expansion, cautiously, of Poland's external autonomy. Much, therefore, depends on the degree to which the Soviet Union, itself, will pursue an enlightened policy and will come to recognize, as the United States has come to recognize, though very painfully and still hesitatingly, the fact that imperial zones of control are outmoded and that in the newly interdependent world they are, in fact, the source of tension. We still have a long way to go, and I would highlight one item to which we ought to be more sensitive, namely the Panama Canal arrangements, which are increasingly anomalous in world affairs.

The Soviet Union has yet to recognize the fact that an Eastern Europe which is more autonomous and which is more re-associated with Western Europe would be, in fact, a source of stability and another way of linking the Soviet Union with the global political system and the global economy, something which the Soviet Union would prefer at this stage to accomplish on a more selective basis, especially with respect to its economic interests without in any way altering its other political, ideological, and strategic arrangements. It is this limitation, in fact, which on the whole makes me skeptical about the possibility of any major integration of the Soviet Union into the world system until these broader changes take place.

My sixth proposition is that the next decade or so will see a further realignment in economic and political power, of which the following deserve special note.

The first pertains to the world-wide American economic position. Here it seems to me important to differentiate between the shorter-term and the longer-term. In the shorter-term, in spite of present difficulties, I am on the whole optimistic. It seems to me that the dollar is presently undervalued, that there will be a significant change in the balance of payments, that there will be a shift in reserves, and that the American position will improve vis-à-vis the other competitive economies.

I am more concerned about the longer-term prospects of the American economy. Here two reasons preoccupy me. The first is that today we are mostly competitive and creative only in two areas, both of which pertain to the post-industrial aspects of our economic development. The first of these is in conducting our agricultural business, which makes us an extremely competitive agricultural exporter. The second pertains to industries such as aerospace and other areas. In both of these we will continue to have advantage. But in the large, across-the-board area of industrial production we are becoming less and less competitive.

Our productivity is not growing as rapidly as that of our principal competitors. We are less innovative, and for a variety of economic and social reasons we are pricing ourselves out. This, I think, is going to create an increasingly difficult situation for the United States vis-à-vis our competitive friends.

The second longer-term problem pertains to the transformation of the American economy from the relatively resource-independent economy to increasingly resource-dependent economy. This dependence gives us a higher stake in international stability and particularly in good cooperative relationships with the third world, precisely that part of the world which is most likely to be subject to great tensions and upheaval.

These two elements introduce a major question about the viability of the American economic position worldwide, and they carry with them very significant political implications.

The second aspect of the realignment pertains to the rise of Europe. There has in recent times been a debate over the question whether Europe is or is not emerging as a political force. Many Americans are disappointed by the slow rate of progress and point to French policy as a major obstacle. My own judgment is that while these considerations are true, they obscure the gathering momentum of a developing European political emergence.

Europe is, in fact, emerging as a political force. It is developing its own political outlook. For reasons I mentioned earlier, it is not beyond the range of possibility that within ten years Europe could be a source of greater conflict and tension with the United States than the states with which today we have predominantly adversary relationships. This, I suggest, puts a particularly high premium on the careful nurturing of American-European relationships, on the very deliberate attention being given this relationship, a far greater degree of intercourse and dialogue with the Europeans as well as the Japanese.

The third area of change, which might involve a realignment of power, is the Middle East. The Middle East on the economic plane, particularly on the monetary plane, is likely to become an economic force similar to that of Japan today, though in different ways. It is not going to be a political nor a militant force, but it will have a very significant impact on the world monetary system and the world economic system. Increasingly, therefore, the task of American foreign policy will be to formulate policies which anticipate this development and which aim to integrate the Arab countries in an international system in which they are given both status and dignity.

I think we have to face the fact that the Arabs have been denied both status and dignity in the international community in the last 40 or 50 years of their history. It ought to be the objective of American foreign policy to integrate them more effectively, for otherwise the monetary power that they will acquire will become an increasingly destructively negative force on the international system.

Our task has to be to create institutions and opportunities for the Arab countries to become good citizens in the emerging global system. They presently view themselves always as adversaries, which in turn perpetuates them as adversaries at a time when their monetary position is going to make them an increasingly important force in the world global system.

The fourth factor of change already mentioned in a different context is Brazil. It is going to become a very major force on the international scene. I would argue that Brazil has more the makings of becoming a superpower, in fact, than Japan, because of the optimum relationship among population, resources, geographic position, and so forth.

Moreover, the Brazilian national system is unemcumbered by any guilt feelings about the recent past and hence is likely to move into an expansive and even ecstatic phase of its development.

The last element of instability on the world scene pertaining to realignment is Japan. Here my source of concern is not so much a re-armed nuclear Japan becoming a threat to peace but, rather, a frustrated, disoriented, confused Japan, not knowing where it should be heading, not integrated effectively into any major international framework, frustrated and

disappointed by the treatment meted out to it by the United States, subjected to increasing domestic strains.

My judgment is that Japan is entering a phase of political development which increasingly parallels the West European experience. That is to say, growing polarization between right and left and fragmentation both of the right and the left. In the foreseeable future that fragmentation will be more dangerous within the right than the left, the cumulative effect of which might be to make Japan, instead of a good citizen in world affairs, an unpredictable citizen.

My last and seventh proposition to put to you is that we are witnessing today and are going to continue witnessing for the next decade and a half the fading of distinctions between domestic and international affairs, the fading of existing distinctions between economic and political policy. We are in fact witnessing the emergence for the first time in the history of mankind of a global metropolitan political process, very much like that of a big city like New York.

It is a situation of very ill-defined sovereignties, of conflicting and competitive jurisdictions, of overlapping loyalties, of concentrations of orders, stability and prosperity, and of disorder, instability and poverty, both in close contact with each other; of spasmodic and sporadic violence but not sustained violence as we have known in earlier days when wars were officially declared and officially ended; a situation of confusion but no longer a situation which deserves the name international, for international politics are no longer dominating in this process.

The traditional distinction between foreign and domestic is disappearing. This implies, I believe, that we cannot conduct our foreign policy much longer on traditional patterns, as a secretive, personal, Machiavellian foreign policy, based on concentration of authority, and indeed even deception.

I am prepared to concede that such a process makes sense in restructuring the American-Soviet or the American-Chinese relationships. But in a broader global sense it is inadequate and antiquated. We need to end the personal secret diplomacy style, and we need to revitalize institutions such as State and Treasury, because the complexities of foreign affairs today are too broad for a small group of individuals to handle on a personal basis. They involve too many interactive, complex, technical issues. And beyond that, we need to develop an integration of departments on a much more modern and functional basis. In my judgment, we increasingly need foreign policy machinery which operates on the basis of ad hoc assignments in response to immediate problems and likely problems over the next five or so years. Such machinery, in my judgment, should not be standing bureaucracies which develop their own vested interests but increasingly flexible ad hoc, task-oriented missions which are designed to meet a special problem and which are dissolved or reorganized periodically.

In such context it seems to me also we have to have a far more flexible and intimate relationship between professional bureaucrats and those elements of the governmental system which represent domestic politics, namely the legislative, because of the fundamental intermeshing of the domestic and international aspects of what used to be called foreign policy. In effect, I am arguing for institutional revitalization instead of personal concentration, not on the basis of standing, traditional bureaucracies but, rather, on the basis of flexible, mission-oriented, ad hoc task forces which are periodically subject to reorganization as their missions are fulfilled or as circumstances enter into these missions.

Let me now conclude with a fundamental observation. In my judgment, what we are witnessing today in world affairs is the emergence for the first time of a global community. This may sound like a cliché, but it is important. A global community has not existed before. It is now in fact coming into being. It is coming into being in spite of, rather than because of, the foreign policies pursued by most states in the world. Most foreign policies are still subject to influence of national system, to the influence of ideology, to the influence of cultural parochial system or traditional institutions.

If the United States is to play a creative role in the world, if it is to be true to its own innovative mission —for it was born as an innovative society quite unlike any other society in the world—and if it is to avoid isolation in the world affairs which our wealth and power might produce I think the United States has to shape its foreign policy increasingly with the realization that the global community is a central premise of its foreign policy.

Indeed, if we are to promote stability and progress in the world affairs and avoid the central danger we confront, which is not war but anarchy and fragmentation, then the very deliberate promotion of the global community and the focusing of our national foreign policy objectives on interests which are common to all rather than purely national has to be the focal point of our attention. I would suggest this is a serious prescription, that increasingly the global community has certain common problems pertaining either to stability of the economic system, economic development, problems of nourishment, problems of growth, and these problems have to be the focal organizing elements of our own foreign policy. We cannot break with the past rapidly. Security issues, traditional diplomatic issues, will continue to preoccupy us. But if we want

to remain the creative society that we have been in the eyes of the world, the other issues have to become increasingly the focal points of what we do.

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Q. (Mr. Abshire) You made various suggestions on the possible reorganization of the government to meet new and future needs, and you mentioned ad hoc missions as one possibility. In light of past attempts to organize ad hoc groups and the limited successes they have enjoyed, can you think of any approach that might make them more feasible? In this connection, how do you reconcile their use with a basic need to reorganize departments and departmental structures, allowing that hasty ill-planned reorganization presents problems of its own?

Henry Kissinger in his book on nuclear weapons and foreign policy suggested ideas on how to reorganize the Department of Defense. I doubt he would prescribe now what he said then. Do you have further thoughts, though, on an ad hoc mission approach as compared to that of looking at the departmental structure and functions themselves in anticipation of some of the functional missions that lie ahead?

A. My own experience in the government, the State Department, has been essentially as follows: I was impressed overall by the quality of the individuals involved in the department as well as in some others, notably the CIA, Treasury, and the White House, much less so in the case of some other departments. Nonetheless, even in the case of these departments, where the quality of the individuals was extremely high, individually, I was struck by the extraordinary under-utilization of that quality. My judgment is that this individual quality is underutilized because the departments have become too complex.

There are too many overlapping institutions. There has developed too much of a traditional way of doing things. I think this is inherent in a situation in which individuals are recruited into career lines, are promoted through career patterns, develop highly specialized orientations, and interests as well as personalities, and, hence, there is little flexibility built into the system.

I would like to see a situation in which there is far greater rotation of individuals in the departments. There has been some movement in that direction, but I think it is far from adequate. I would like to see a situation also in which the number of specialized units within departments is reduced, in which there is greater creation of joint departments or subunits between the departments on an ad hoc basis, either to deal with developing countries or to deal with the communist countries, or to deal with a special problem, rather than continuing lines with individuals rising to bureau heads, to deputy secretaries, assistant secretary, and so forth, which seems to me to create a degree of compartmentalization which is destructive to innovation.

Beyond that, I wonder whether existing departments are not sealed off excessively from public opinion and contacts and the state of mind of the nation. Here some devices are needed that do not fundamentally challenge the division and separation of powers, which is a fundamental constitutional principle.

Beyond that, I would like to see some statutory limitation on the existing departments. I see no reason, a priori, why the departments ought to continue indefinitely. Most other institutions in our society have to justify their continuance through business performance. I see no reason why bureaucracies should not do that. Some statutory limitation on the existence of departments, perhaps 10 or 15 years, might be an interesting way in which to introduce an element of flexibility into the structure without at the same time creating a situation of such confusion and anxiety as to make these totally useless.

What impresses me generally in foreign affairs is that modern, large-scale, internationally active corporations have a far more effective way of operating internationally than the State Department. I would much rather deal abroad with the representatives of IBM than with many of our embassies, in terms of perspicacity of analysis, flexibility of operation, and rapidity of movements.

We operate internationally on the basis of a system defined in 1815, with the added luxury of telephones and other communications.

Q. (Dr. Lubbers) You have mentioned the dangers of an anarchy and you have used the term "spasmodic" rather than systemic to describe societal upheaval. You suggested that secret, personal diplomacy is outmoded and that bureaucratic channels should be revitalized to cope with present and future problems. Yet, we see increasing concentration of foreign policy decisionmaking in the White House to the virtual exclusion of various bureaus within the Executive. However, the problems you point to in the future seem to encourage more of a strong personal response to eruptive situations. Can you develop a bureaucracy flexible enough to cope with immediate and difficult situations?

I wonder how you get a bureaucracy flexible enough to handle that. The very nature of bureaucracies, even when changed from time to time, seems to militate against a flexible response.

A. I would differentiate between the need to respond to specific situations, in which obviously you do need a certain amount of centralized authority for quick reaction, and a response which is designed to deal with underlying and continuing

causes. It seems to me that one of the very major problems of existing foreign policy is that while it deals effectively with the former it is rather unresponsive to the latter, actually less responsive to the gradual strains and rift in the American-European or American-Japanese relationship. I see relatively little effort in trying to create a real framework to deal with the problems, and I do see certain specific actions which, in fact, exacerbate the problem.

With respect to the third world, which I think will be an increasing source of tension in that relation, the situation is getting worse. I think the term "benign neglect" applies extremely well to our policy with the third world.

This, I think, is precisely the kind of situation which is not susceptible to easy handling on the basis of personal decisions because it isn't a matter of this or that specific action. It is much more a matter of broadly conceived and sustained involvement in certain efforts, to either ameliorate the situation, channel it in certain directions, or to make certain hopeful outcomes. It is, I think, a shocking fact today that of all the rich nations in the world, the United States is probably the least involved, relatively speaking, in the problems of the third world. This is a very significant change. This change has taken place in part because the leaders in power have become extremely frustrated in dealing with Mrs. Gandhi, or in dealing with other leaders of the third world.

The issue is how to generate the broader sense of national involvement. Here it seems to me that a greater amount of participation, a greater degree of action, could be achieved. I think most Americans accept that notion, and most Americans are aware of the fact that just like ghettos in New York in the long run are vulnerable, so, too, global ghettos are vulnerable, and they would be prepared, it seems to me, to involve themselves in an international effort in this kind of a problem.

Q. (Mr. Casey) In reference to your suggestions on the use of task forces to deal with certain problems, how do you think that the private sector can and should be included in these task forces? Specifically, what do you think we could learn from the way the Japanese Government and business forces work together?

A. As far as the Japanese business-government experience is concerned, my view of that is somewhat mixed. I think this kind of interaction has been extremely helpful in promoting the Japanese world position. There is no doubt that the mixture has made the government more sensitive to its economic opportunities and more responsive to broad economic interests. In that sense it has worked well.

But at the same time I think it has introduced into the Japanese Government, in part for special cultural reasons, a degree of paralysis which has made the Japanese unable to act rapidly under certain circumstances. It does seem striking that when crisis situations develop the Japanese decision-making system, which is extremely effective in the broad sense, then it freezes, and it is very difficult for the Japanese to react quickly either to monetary change or to economic opportunity.

I have been told repeatedly by Indonesian planners that they find that in competitive bidding the Japanese cannot operate effectively as the situation fluctuates. We have seen in the last several crises that the Japanese tend to freeze, a situation which was also one of their weaknesses in World War II. But I don't think it is necessarily a cultural union between business and government but more a function of the cultural background and behavior, for one to take the initial step in confronting bad news and communicating it to others, and so forth.

It seems to me that in the American system, the business community could become an extremely important element in any effort to create ad hoc flexibility patterns of response. I think in recent years the business community has been far more imaginative in adapting new technical facilities to its operations than the government.

I was struck when I was in the government when we were the first time playing around with Planning-Programming-Budgeting System, which the business community had been using for quite some time. The business community has assimilated in its operations modern communications means. It is willing to change its *modus operandi* much more rapidly. I would like to see experimentation in a variety of fields in which the traditional institutions of government—State, Treasury, Commerce—are compelled to operate in a context of task forces in which they are more or less equal components with the business community, maybe some specialized with expertise, rather than academic, that the applied policy experts in the community, and legislators, to the extent it is compatible with the separation of powers.

I think such a pattern of experimentation would result also in revitalizing the institutions. I think it is very unsatisfactory to see several thousand very able people cooped up in a building, as for the last five years, learning about significant developments in most cases by reading the morning newspaper. They sometimes get out of the building, but it doesn't help them much.

Q. (Mr. McGlinn) In reference to the ad hoc assignments, how would you establish the various task forces, from which branch of the government would they originate, and with what broad issues would they be concerned?

A. I would think given the nature of our system,

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the initiative would have to come from the White House. But also given the nature of our system, I think it would have to be in close consultation with legislative leadership.

It would take these two, with consultive relationship to initiate the agencies.

I think the limitation could be developed through some sort of steering committee, which would involve the other communities while at the same time insuring observation by the Legislative Branch.

In very broad terms, the task forces would examine problems with the third world, problems with developed countries, and problems with relation to Communist states.

This would be the most broad of all. Within each, you would have more specialized geographical and functional units. It seems to me some division along these lines lends itself to the kind of integration and the different kinds of participation that are needed.

In a modern society such as ours, the notion of a small standing official body specializing in the problem is really antiquated. The reason these specialized departments developed was that foreign affairs was a specialized field, foreign countries were distant, and most of society were ignorant, anti-interested and uninformed.

Today you live in a world where societies interact. People travel. You have many groups in your own society which are in fact engaged in foreign affairs, and there is a far greater dispersal of expertise.

Q. (Mrs. Armstrong) What do you perceive to be the future role of the U.N.?

A. I would differentiate between the U.N.'s role in the political domain and its role in the specialized fields. In the political domain, I consider the U.N. essentially to be a kind of psychological safety valve for the smaller nations which provides them with a sense of equality with the bigger nations.

Beyond that, it seems to me that the U.N. is incapable of many of these assignments, unless through the major powers, which means that they represent the source of political action in the U.N.

In the specialized fields, it seems to me it is an extremely useful instrument and could move into new areas. It is in the specialized fields where I feel its major contribution lies.

The Tasks Ahead for U.S. Foreign Policy

Robert R. Bowie
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I. INTRODUCTION

What will be the main characteristics of the world environment over the next several decades, especially as they may affect the interests and role of the U.S. and the conduct of its foreign policy?

This question opens up a wide range of more questions. What will be the major forces for change or for continuity? What courses will other major states pursue? What problems and opportunities will such factors pose for U.S. security and well-being? How might they affect the U.S. role, purposes, and priorities?

Scope

Obviously, a full analysis would require one or more large volumes. A modest essay must inevitably be highly selective, mainly stating conclusions without attempting to support them by much argument or evidence.

My focus is primarily on identifying the ongoing and emerging tasks for the U.S. in its external relations as a basis for judging what machinery and procedures are required to perform them. In no sense is this an effort to predict the world situation in 1990 or 2000. That future will be the product of the interaction of many conflicting forces, of critical decisions yet to be made, and of accidents which cannot be foreseen. The world is far too complex and too much in flux to permit such prediction.

What is needed is still ambitious but somewhat more manageable. The crucial questions are: In the light of emerging trends, what sort of relations and order will be required for stable peace and well-being? How can the U.S. best use its influence to improve the prospects for constructive outcomes? What are the implications for the conduct of U.S. foreign policy? In particular, what kind of structures and methods are needed to perform the emerging tasks? Such an analysis still depends on assessing the major forces at work and the probable conduct of other states. But it does not assume that future outcomes can be predicted, nor that U.S. efforts will necessarily succeed.

Approach

In projecting the future, the first question is how it will relate to the past. Some see the world as crossing a watershed into a brand new stage as a result of the changes during the post-war period. Those have been manifold: The Sino-Soviet split, Soviet nuclear parity, the revival of Western Europe and Japan, the European Community, the proliferation of new states, the situation of the United States, the breakdown of Bretton Woods, etc. Clearly they have greatly modified the power and perceptions of some of the major states and the relations among them. Those changes are important, but they are only part of a more complex situation. In looking ahead, they must be balanced by other underlying factors.

On a more fundamental level, the next three decades will show much continuity with the last three. In essence, mankind is in the midst of a protracted period of dynamic change in societies and in relations among them. The main engine of change has been, and will continue to be, the impact of science and technology directly on industry, agriculture, transport, communications, and weaponry, and indirectly on mores, values, institutions, and expectations. These processes have been going on for many years and have spread more and more widely around the world; they seem destined to continue.

In international affairs, they have been making the world more interdependent, while increasing the numbers of states and actors. They pose the long-term necessity of developing a global order meeting the needs of an evolving and interdepend-

ent world composed of nation states, which are also in transition. Thus the international environment will be largely shaped by tension between (1) the growing interdependence and interpenetration among societies and states, and (2) their reluctance or difficulty in adjusting to it or managing it.

In my view, this offers the most fruitful perspective for approaching the tasks of foreign policy over the coming decades. Accordingly, the primary purpose in the following pages is to elucidate briefly the conditions creating and defining these tasks and their implications. Section II attempts to identify relevant general trends in the international system; Section III discusses the probable roles of the main actors and the relations among them; the final sections consider the implications for the making and executing of U.S. foreign policy, without seeking to prescribe specific or detailed structures or procedures.

II. TRENDS IN THE INTERNATIONAL SYSTEM

The general trends or forces which are likely to be most significant are:

The Future Role of Force

The nature and sources of power will be changing in the future international system. For various reasons, force may well be less effective for compulsion and coercion than in many past periods; in many cases, it may be less useful than economic or political leverage. Even so, force will still play a significant role.

Nuclear weapons display the paradox starkly. Despite their gruesome power to annihilate, these weapons have had little utility except to deter since World War II. As long as a nuclear stalemate exists, the Soviet Union (and China) as well as the West will surely recognize the futility and disaster of initiating nuclear war. Indeed nuclear weapons create a form of interdependence among adversaries as well as allies. The reciprocal capacity to retaliate enforces cooperation to minimize the risks of nuclear war. That premise underlies the Soviet coexistence policy.

Yet military force will still have utility for some purposes, direct and indirect. Soviet conventional forces provide the ultimate means of retaining control in Eastern Europe, for example, as Czechoslovakia showed. The threat of force can exercise leverage elsewhere, as was apparent in the Middle East crisis of 1973. In Western Europe, Soviet military predominance and proximity could also assist in expanding Soviet influence and political leverage if the off-setting U.S. presence declined. Finally, transfers of military equipment and the presence of advisors and naval forces may continue to be a source of influence, especially in the less developed countries (LDCs).

The Soviet Union, and perhaps China, are likely to continue to view military capability as a significant instrument of influence and expansion, while avoiding its direct use or even explicit threats of use. The Soviet efforts to increase and improve its military power both relatively and absolutely have shown no signs of abating. In nuclear weapons, it appears to seek "superiority" in numbers and megatonnage; it maintains far larger and stronger conventional forces; and its naval forces also are steadily expanding. While limiting ABMs, SALT I did not impose significant restraints on the Soviet expansion of offensive weapons. Whether SALT II will do so, remains to be seen. If it accepts parity, the Soviet Union could benefit from reducing the arms competition or even cutting back nuclear strategic systems, without abandoning rivalry in other forms.

In any case, the allies in Western Europe and Japan will depend on the U.S. nuclear umbrella for at least a decade and probably indefinitely as the deterrent to Soviet (and Chinese) capacities. Even if SALT should ultimately achieve an agreed parity, with a slow-down or reductions, the allies would still not be able to provide their own deterrent without major changes in policy. To do so, the West Europeans would have to agree to create a joint nuclear force, absorbing the French and British forces and to expand it significantly. The political basis for such a step does not yet exist in Western Europe and seems likely to develop slowly at best. Japan would have to reverse its present policy against having such weapons—with serious domestic and international repercussions. That seems unlikely for some years ahead in the absence of collapse of the relations with the U.S.

Maintaining effective alliances and defense capacities will pose serious strains for the West both domestically and among the allies. If "détente" continues, concern for security seems likely to decline. The democracies will be under constant pressure to cut military budgets and forces, as the costs of manpower and more intricate weapons steadily increase. The Soviet Union (and China) will be better able to maintain or improve their forces, despite competing demands for resources for industry and especially for consumer goods. Their leaders can resist such pressures more readily, and conscripts will keep down their manpower costs.

How to cope with the potential imbalance will be a serious task for Western policy in the 1970's and 1980's. It can easily become a source of friction and

distrust among these nations, which will be all the more difficult if they fail to manage other fields amicably.

In the developing nations, violence may become more serious over the coming decades. The poorest nations, including India, Pakistan, Bangladesh, Indonesia and others with very low incomes, will face severe problems (discussed briefly in III), which may result in internal disorder and political breakdown, with widespread violence. Conditions of hopeless poverty may well breed extremists who resort to terror and sabotage against the rich nations, which will be highly vulnerable to such measures.

Interdependence

The most pervasive factor in shaping international affairs in the coming decades will be growing interdependence of societies and nations around the world and their reactions to it. Separate states, even the largest, will not be able to meet their basic needs for well-being independently or to insulate their societies and economies from external influences and forces. They will have to cooperate with others in many ways for mutual benefit.

Interdependence is nothing new. Three decades ago, it was the premise for the formation of the UN, the IMF, the GATT, and the World Bank. The lesson drawn from two disastrous wars and worldwide depression was that secure peace as well as economic well-being depended on international cooperation.

And with the onset of the cold war, the Western nations still recognized the necessity to work together to contain Soviet power and to revive Western Europe and Japan. For over two decades, their cooperation in security, trade, money, and economic policy surmounted divergencies over strategy, colonialism, the Middle East, and nationalism. It achieved not only security but unprecedented prosperity, with constantly rising incomes.

During this period, interdependence has steadily grown and has now reached dramatic levels:

For the past decade, world trade has been expanding at 10 percent per year, with total exports now approaching $400 billion. More and more, capital in all forms, direct investment, portfolio, and short-term, flows across borders on a tremendous scale. Multinational firms, with subsidiaries around the world, have become an essential means of organizing production and distribution across national boundaries. Their sales now amount to some $400 billion per year, and the resources of some firms are far larger than those of many host countries. According to some estimates, such firms are involved in nearly half the trade of the advanced nations and account for a quarter of their industrial output. Through such firms and otherwise has come a great increase in the mobility of technology, managerial techniques, experts, and skilled labor. Interdependence makes nations vulnerable in various ways. Inflation, the Arab slowdown in Middle East oil, or the sudden U.S. stoppage of food exports dramatize the degree of such exposure and dependence, as do terrorist attacks or the hijacking of planes by desperate extremists.

The prospects are that such interpenetration will continue to grow over the coming decades, unless consciously blocked. At least three types of economic linkages will require concerted action among many or all states:

(1) The flow of goods, funds, people, and firms across borders makes states and societies increasingly sensitive and vulnerable to external events and actions. Governments will not be able to manage their national economies and the welfare state without cooperation with others to regulate the system of money, trade, and investment and economic policy, as well as the multinational corporation.

(2) Expanding demand and shortages will require joint action to assure the steady supply of raw materials, energy, food, and fertilizer, as well as efforts to foster growth in the developing nations and the control of population.

(3) Technology and the shrinking globe are producing new problems of interdependence. Pollution from one state may damage waters or atmosphere beyond its borders and harm the environment of others. And resources of the oceans, such as fish or oil deposits on the continental shelf, or minerals on the ocean floor, become matters of concern to many states, as technology expands the capacity for recovery.

Of course, the degree of interdependence and its effects are not the same all over the world. The advanced nations—North America, Japan, and Western Europe—are much more intimately linked than any other areas for their security and well-being. Even for the United States, Western Europe and Japan are essential partners for many purposes.

The developing countries are in quite another situation. Most of them depend on the advanced nations for resources and technology, and for markets for their goods. In this sense they are dependent. Some of them control essential raw materials, especially oil, which are vital for the economies of the advanced countries. In dealing with many global problems, LDC cooperation will be essential. In a larger sense, the world has shrunk too much for the advanced countries to be able to live comfortably with a seething mass of poverty in the LDCs.

Until recently, the Soviet and East European economies, while closely linked, sought to avoid being tied too closely to the non-Communist world. Now, they are seeking trade, technology, and credits from the U.S. and Western Europe to make their economies more productive. Despite ups and downs, those pressures seem likely to persist into the future.

Interpenetration will not be limited to economic factors. Ideas, information, and political pressures flow across boundaries with major impact on attitudes, social change, and domestic politics. Such transnational forces obviously have their greatest influence among the open societies of the West. But even closed systems like the Soviet Union and Eastern Europe cannot shield themselves entirely from such penetration, as has been shown in their predicament in controlling dissenters like Sakharov. This trend seems almost sure to grow.

The necessity for concerted or joint action to handle common needs and problems seems certain to enhance the role of international entities, whether now existing or created hereafter. Doubtless they will take many forms: Some will be global (like the IMF, World Bank, the UN, and its agencies); some will serve more limited groupings (like OECD, OPEC, regional banks, and agencies); and some will be private entities like the multinational firm.

The Nation-State

The changing position of the nation-state will be one of the key features of the international system in the coming decades.

In that period such states will still be the main actors on the international stage. Indeed, in sheer numbers, this will be its heyday, with some 150 states (nearly half of which have under five million citizens). Even if Europe becomes an entity for international relations, the Community will in effect be an enlarged European state for these purposes. Yet the autonomy of the state will be eroding.

In the coming period, the nation-states will be buffeted by conflicting pressures, both from within and without, which will greatly complicate their functioning and the tasks of their leaders.

(1) Around the world, the state is charged with more and more responsibility for the welfare of its citizens, largely as a result of the impact of industrialization, urbanization, rapid change, and dislocation, plus higher expectations for services. Thus citizens expect the government to assure growth, prosperity, rising incomes, jobs, and social welfare; to cushion adjustment to change; and to redistribute income to ensure greater equity for disadvantaged groups. More recently, affluence and growth have prompted greater concern for pollution, the environment, and the quality of life.

(2) The capacity of national governments to fulfill these responsibilities, especially in the non-Communist world, is increasingly eroded by the interdependence which makes their economies and societies highly vulnerable to external forces and events. By themselves, they cannot effectively manage their economies or cope with many other needs or problems.

Thus, foreign affairs become deeply enmeshed in domestic politics and affect the ability of leaders to meet the expectations of the electorate. Moreover, external factors may damage some groups within the society and benefit others. Similarly efforts to concert with other nations will often require domestic actions which impinge on the interests of strong groups within the society.

Consequently, national leaders tend to feel caught in the middle, between (a) the needs for linkages with other economies and for cooperating with others to handle many such factors and problems, and (b) the pressures of local political groups which are forced to adjust or hurt by dynamism and change, or by the measures for international cooperation.

These effects are most apparent in the advanced democracies, which are most interdependent. Yet, the developing nations are under similar pressures in trying to cope with their staggering problems. And even the closed Communist societies are being forced to reach out for trade, technology, and credits in order to meet their needs.

(3) Almost all societies are experiencing popular discontent or disillusion, traceable largely to the process of change and its effects and disappointments. Mobility, urban life, and large organizations in business, unions, and government have generated feelings of anonymity and resentment, of having little influence or control over the remote forces or institutions which determine the conditions of life. Affluence and growth have not assuaged such feelings, but have fostered greater hunger for human contacts, meaning, and more satisfying conditions of life. Moreover, a new generation, which did not experience the depression or WW II, questions many of the priorities and premises which underlay the political consensus in many democratic states and among allies.

While such feelings and attitudes express themselves in many forms, often as ethnic or regional loyalties, they tend to run counter to the demands of interdependence. The external forces and the international agencies to manage them seem even more remote and beyond control than national institutions.

The less developed countries have special causes

for turmoil. On the whole, they have achieved growth in GNP over the last decade or more, some to a remarkable degree. But social disruptions from growth, plus expanding population, have added new complexities: rural poverty, urban slums, unemployment, and income disparity among others. With these conditions have come political and social instability, doubts about development strategies and priorities, deeper resentment at the wide gap between LDCs and the advanced nations, and the search for leverage on them.

Finally, the Communist world has its own sources of internal tension. The task of managing an advanced industrial economy becomes more and more complex for a one-party state, where tight political control severely hampers the search for efficiency, innovation, and productivity. Scientists and intellectuals begin to chafe at the restraints on freedom of expression and movement. And workers, though less concerned with these issues, press for more consumer goods and better living conditions. In Eastern Europe, to these factors is added the national restiveness at continuing Soviet dominance.

Obstacles to Cooperation

The conditions of international life have been evolving far faster than the readiness and capacity to deal with them.

The need for nation-states to develop the processes and institutions for working and living together is an objective reality which transcends the wide differences in history, outlook, and values. Yet cooperation to meet common needs is severely impeded by parochial loyalties and attitudes. Several are especially significant:

(1) While separate nation-states may be unable to handle their problems or to advance the interests of their citizens, they are still the main focus for political loyalty around the world. In the advanced nations, such attitudes are generally temperate and not imperialistic or directed against neighbors, but they reflect the desire of communities to run their own affairs and to control their own destiny. In the LDCs, nationalism competes with the loyalties to tribe, locality, and family and therefore expands horizons, but it still nurtures the desire for autonomy and independence and may produce turmoil and friction.

(2) Another barrier to cooperation is disparity in power or conditions. Inevitably, weakness and poverty make many LDCs reluctant to be linked too closely to stronger, more advanced nations. Memories of colonialism, buttressed by a sense of vulnerability, produce a defensive concern to keep their distance. Even among the advanced nations, disparity in power is an obstacle: the political disunity in Western Europe, and Japanese political weakness often impede or complicate cooperation with the U.S., for fear of its dominance.

(3) A third obstacle is ideology, especially in the Soviet Union, Eastern Europe, and China. While it may have declined in vigor, ideology still limits the readiness to work with the non-Communist nations. In general, relations with them are still viewed as hostile rivalry. Accordingly, cooperation is often only tactical and must be managed so as not to dilute domestic political control or impair the closed system. Yet some collaboration is necessary—to avoid risks of nuclear war and to obtain benefits of trade, technology, and credits from the West.

III. SPECIFIC ROLES AND RELATIONS

The forces and tensions already discussed are bound to make international relations extremely complex over the coming decades. That complexity will be compounded by the uncertainties in the purposes and reactions of major states.

The USSR and China

For years to come, the basic Soviet strategy will almost surely be "peaceful coexistence," as it has been for fifteen years or more. Essentially, that strategy is to avoid nuclear war with the U.S. as suicidal, while continuing an active struggle to expand Soviet influence by other means. While its premise is hostile rivalry, especially with the U.S., it does not exclude forms of collaboration which serve Soviet purposes.

This framework still allows wide latitude for adapting the Soviet course at any time to prevailing conditions. Indeed, the content of the policy has evolved during a decade and a half. Krushchev experimented with détente as well as with pressures (Berlin and Cuba), backing off to avoid confrontation, and apparently deciding after Cuba to equal or surpass the U.S. in strategic nuclear weapons. Since the late 1960's, the "coexistence" policy has taken the form of "détente," or lowering of tensions, as best suited to Soviet needs and opportunities.

Unless and until conditions change substantially, the course is likely to be continued to obtain its full benefits:

(1) Détente offers the USSR the basis for economic progress without major political reform. Growth in food, consumer goods, and high tech-

nology have lagged in part due to the burden of a heavy and obsolete political and bureaucratic superstructure. Yet any adequate reform would threaten entrenched interests inside the Soviet Union and potentially the power of the Party itself. Thus, an alternative is to seek technology, equipment, and credits from abroad, for which a climate of détente is essential.

(2) Détente provided the setting for ratifying Soviet hegemony in Eastern Europe, as was done in the Treaties with the Federal Republic and the subsequent steps relating to East Germany.

(3) Détente could also facilitate the extension of Soviet political influence in this phase, especially in Western Europe. Less tension fosters U.S. retraction, and Western economic friction, while Soviet military "parity" or "superiority" nurtures allied doubts about the U.S. security umbrella.

(4) The Sino-Soviet conflict doubtless enhanced Soviet interest in calmer relations in the West. Still, the Soviet force buildup on the Chinese border has not led to reducing those in Eastern Europe.

The détente phase of "coexistence" might not persist under certain conditions:

(1) The Party will not allow a more flexible foreign policy to erode its monopoly of power at home or Soviet control of Eastern Europe. Lower tensions and more contacts do increase the risk of infection from the West, both in the Soviet Union and in Eastern Europe. At home, the Soviet regime has clamped down on dissent in step with détente and probably intends to keep on doing so. For the East Europeans, the Czech invasion of 1968 is a continuing warning against moving too far or too fast. Yet Eastern Europe may not remain quiescent and could produce new eruptions. While the Soviet Union could surely suppress them, that might well upset the present climate.

(2) The flow of trade, credits, and technology from the West may not be adequate to overcome the deficiencies of the economy. In that case, competing claims for resources or pressures for reforms might create serious internal tensions or struggles.

(3) Changes in leadership will occur as a result of death or other factors. A successor would face the same problems as the present leaders but might seek different solutions.

(4) A sudden crisis could result in miscalculations. While the Soviet Union does not want to risk nuclear war, it might misjudge the reactions of others (the United States or China), especially if it believed it enjoyed some form of military or strategic "superiority."

(5) After Mao, the USSR might be able to patch up its relations with China, though a close alliance seems unlikely. The effects on Soviet policy are uncertain.

None of these factors should impair the Soviet interest in avoiding nuclear war, but some might cause Soviet leaders to revert to a more assertive form of "coexistence" in place of détente. Conversely, some might speed up a "mellowing" of Soviet policy toward a real "live and let live" approach.

Yet whether or not the détente policy persists, the Soviet approach toward the outside world is likely to be governed by "coexistence" for an extended period. As has been said, that still implies hostile rivalry with other states and continuing effort to expand Soviet influence wherever the opportunity offers. Similarly, Soviet leaders will hardly dismantle the Party monopoly of power or the Soviet domination of Eastern Europe any time soon.

Such an orientation severely limits the extent of genuine cooperation with other states. Yet it could leave room for substantial measures for arms control, if both sides decided to accept parity at lower levels. And it leaves room for expanding various other types of collaboration (trade, research, exchanges), even though the motives and expectations of the two sides might diverge.

Beyond a certain point, however, cooperative relations can develop or improve only on the basis of trust, in the sense of reliability, of the Soviet regime. That condition is not likely to be met until Soviet leaders become more "responsible" or constrained because Soviet society evolves toward pluralism, or some dispersion of political power erodes the monopoly of the Party leaders. As of now, the Soviet leaders and Party elite clearly are determined to prevent any such changes and to maintain their domination both at home and in Eastern Europe. They may ultimately fail in their efforts, but it would be rash to expect a major shift in any limited term.

Thus the U.S. and the West should accept the prospect of extended Soviet rivalry as a reality even though moderated or channelled by détente. Over time this may change. Meanwhile, a dual policy of deterrence and of proferred cooperation seems the course most likely to induce gradual evolution of the Soviet outlook and policy.

CHINA

The course of China over the coming years seems especially uncertain. For one thing, its policy has depended so heavily on the personal concepts and attitudes of Mao (as executed by Chou) and more recently on fear of the Soviet Union.

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What course will China follow after Mao? For a decade, there have been confusing signs of conflict and struggle among various factions, apparently turning to some extent on the issues of relations with the USSR and U.S. Conceivably, a successor regime might seek to repair relations with the Soviet Union, perhaps at the expense of the détente with the United States, perhaps not.

In any case, China seems likely to limit relations with the U.S. or Japan to fields specifically serving its interests, such as trade, credits, steps weakening Taiwan, or enhancing its own stature. The Chinese effort to expand its influence in the LDCs, by purporting to espouse their interests against the rich seems likely to continue.

The actual power or leverage of China will be very limited for many years. Its poverty counterbalances its huge population. Nuclear weapons and missiles will serve as a deterrent to Soviet (or U.S.) threats and could concern the Japanese, if they lost confidence in the U.S. alliance and its nuclear umbrella. They may enhance Chinese prestige more than its leverage. But after Mao, internal stresses and strains and possible struggles for leadership could greatly weaken its actual influence in international affairs. Moreover, such turmoil or struggles could make Chinese action extremely erratic in relations with its neighbors.

The most that can be said, it seems to me, is that the chances are substantial that China, while not a major force on the world scene, could easily become a disruptive or destabilizing factor in East Asia, as a result of internal developments and their effects on external conduct.

Western Europe and Japan

Interdependence, which is already intense among the nations of North America, Western Europe, and Japan will probably link them even more closely in the future. The critical question is whether or not they will be able and willing to work together to advance their many shared interests. It is by no means certain that they will.

Three factors which favored prior cooperation have grown weaker:

(1) The U.S. is less able or ready to provide leadership or to sacrifice short-term interests for longer-term purposes and allied cohesion. It resorts to unilateral actions, as in the Nixon shocks of August 15, 1971 or the dealings with the USSR and China, which seem to reflect shifts in priorities.

(2) With growing economic strength and lower tensions, the West Europeans and Japanese resist U.S. dominance. Despite their military and political weakness, they expect to be treated more like partners. Hence, they bitterly resent U.S. actions taken unilaterally or without consultation, especially since they are too disorganized to react effectively.

(3) With détente, security no longer has the earlier primacy in domestic politics of the allies, despite the dramatic growth of Soviet military strength. No longer does it offer the leverage to subordinate parochial interests to wider needs for concerted efforts.

Thus, the prospects for the requisite cooperation depend largely on whether or not the U.S., Western Europe, and Japan can develop effective collaboration based on general understanding of its necessity and more equal relationships. That will not be easy.

WESTERN EUROPE

The outlook for Western Europe over the next decade or so is highly uncertain. The key questions are whether the European Community succeeds in becoming an effective entity, and if so, what role it plays.

The European nations are ambiguous and confused. They are not satisfied with their present situation or the state of Atlantic relations. They clearly depend mainly on the U.S. nuclear guarantee for deterring Soviet strength and count on the presence of U.S. forces in Europe to reinforce its credibility. They are uneasy about U.S. troop withdrawals but resist U.S. demands for assuming a larger share of the costs. In economic affairs, they want greater influence but often cannot realize their potential by reason of divergences among the members.

At bottom, the Europeans are uncertain about the direction and priorities of U.S. policy and about the reliability of the U.S. as an ally. In their view, the Nixon administration tended to act unilaterally and without regard for European concerns. And while favoring better East-West relations, they fear U.S.—Soviet bilateral dealings may jeopardize their interests over their heads.

The West Europeans view the Community as the only effective means to bring Atlantic relations into better balance. Yet the prospects for the Community are extremely uncertain. It has, of course, completed the customs union, adopted the Common Agricultural Policy, and made some progress in harmonizing other policies; and it has expanded from six to nine members. At the Paris Summit in 1972, the nine members agreed to move ahead on economic and monetary union and on many other fronts and to establish a European Union—without defining its character—by 1980.

Yet action is falling far short of the rhetoric, espe-

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cially since the strains imposed by the "energy crisis." Indeed, creation of a real monetary and economic union will require a major political leap. The members will have to transfer to the Community authority for managing a unified European economy, and greatly strengthen its institutions for that purpose. Thus far it is doubtful that the key members (especially France and Britain) have the political will to take such a radical step.

In foreign affairs, the members have achieved some concerted positions on a few issues, but they are hardly able to conduct a joint policy. And in defense even less has been done. The Euro-group exists in NATO, but its members have taken no substantial steps toward joint defense planning, research and development of weapons, joint procurement, or unifying logistics.

The governments are currently weak and preoccupied with domestic issues. Yet they are aware that, separately, they will not be able to cope with them effectively or have much control over their destiny. Thus the motivations for unity are likely to persist and even be reinforced by successive problems. Even so, overcoming the divergences about the functions and structure of the Community, and about its role in the world, especially its relations with the United States will take an extended time. And the outcome will be influenced by the actions of the United States and the Soviet Union. Even if the Community does move forward by fits and starts, it will be a frustrating partner for cooperation with the United States and Japan.

If the Community does not progress, the West European states are likely to be a more unsettling factor in international affairs. To some degree they will have to cooperate with the U.S. but will resent the relation if they feel unequal and dominated. Hence their cooperation is likely to be grudging and to be often withheld arbitrarily where feasible. If the U.S. security guarantee is eroded by troop withdrawals or otherwise, they may feel compelled to take more account of the massive Soviet presence, even if not expecting any attack. Gradually this could lead to neutralizing or "finlandizing" some or all of the area. And increased Soviet influence would certainly be utilized to impede further integration and Atlantic cooperation as well.

JAPAN

During the coming decade or more, Japan will be adjusting to changing conditions both internal and external and defining its role in the world. How that process goes will depend both on the Japanese themselves and on the course of the U.S. and Western Europe. The outcome will significantly affect the equilibrium in Asia and beyond and also the prospects of collaboration among the advanced countries in coping with interdependence.

The situation for Japan has shifted radically over the past two decades. During that period, Japan's domestic policy focussed mainly on economic growth; its foreign policy, based on a "low posture," reflected this priority. In practice this meant (1) reliance for security on the U.S. Security Treaty, backed by the nuclear umbrella and the Seventh Fleet; (2) refraining from political initiatives to avoid offending other nations; (3) concentration on economic progress, especially in expanding exports.

Japan's weakness, which prompted this policy, also made it feasible for many years. Starting as a modest factor in world trade, Japan's expanding exports found ready markets; its import barriers were endurable; and its raw material needs were manageable.

Her success has produced the agenda of problems for the future. With her GNP doubling every six or seven years, Japan became the third largest economy in the world by 1970. This priority on GNP growth had heavy social costs, however, in housing, pollution, environment, etc., generating a growing discontent at home, despite steadily rising incomes.

And it also produced external problems. The sheer size of the Japanese economy gave its actions a new significance, especially as U.S. economic strains developed. Inevitably, frictions arose over the impact of Japanese exports, both on specific industries and on the U.S. balance of payments. Moreover, Japan's emergence as a major economic power created new attitudes at home, including a growing sensitivity about undue dependence and a reviving sense of national pride. And resentment was exacerbated by the U.S. tendency to take Japan for granted, or worse, to ignore her, as in the reversal of China policy in 1971.

Thus, Japan is now in a phase of transition, both in its domestic and external affairs. Domestically, there seems to be a consensus that Japan should shift its priorities and devote more resources to social welfare and public services in the form of better housing, reducing pollution, improving roads and social capital. It is recognized that this may reduce the rate of GNP increase to some extent, though high rates are still projected.

The Japanese are keenly aware of their dependence on the international system of trade, money, and investment for their sources of essential raw materials, food and energy and for markets. For that reason, the "energy crisis" and rising cost of oil, which is virtually all imported, has been especially unsettling for Japan. Inevitably, despite phenomenal growth, Japan feels vulnerable to any interruption of her economic lifeline. Actually, some nations in Europe are just as dependent as Japan on

imports, exports, and monetary stability. But Japan's sense of exposure and potential isolation is doubtless enhanced by geography and history: Soviet and Chinese power could seem quite near if that of the U.S. seemed remote.

The Japanese realize the necessity of their taking more responsibility in international affairs. They recognize the need to join in managing the monetary and trade systems and to reduce their own barriers to imports of goods and capital. If they can, the Japanese seem likely to prefer to maintain the U.S. nuclear protection, even though this implies continued dependence. Basically, they do not want to develop their own nuclear deterrent, because of their vulnerability and the strong domestic resistance. It would also affect Japan's ability to improve relations, including trade, with both China and the Soviet Union and make it harder to avoid becoming involved in their hostility.

Thus doubts about U.S. reliability or direction are deeply troubling. Under some conditions Japan might feel forced to consider creating its own deterrent and would certainly have the know-how and resources to do so. If she did so, the step would have a profound impact on the stability of Asia and on Japan's own position.

In short, both at home and abroad Japan faces frustrating dilemmas and uncertainties which require hard choices and planning ahead. Yet Japan's traditional methods of political decision are not very well fitted to handling these problems. The ruling political party has been gradually losing strength, and the opposing parties are too split to offer any adequate alternative. Moreover, the Japanese tend to reach decisions slowly in the search for consensus. Often only a crisis or external shock seems able to overcome the stagnation or stalemate among diverging views. Consequently, the process of adjusting to changing conditions and clarifying Japan's role and its relations to the other advanced nations and to its neighbors is likely to be cumbersome and drawn out. Again, the attitudes and policies of the United States (and of Western Europe) will have a formative influence for good or ill on this process.

Less Developed Countries

The developing countries will become more divergent over the coming decades. A number of these nations, especially in Latin America, will reach levels of income and progress far beyond the poorer LDCs. The major oil producers of the Persian Gulf and elsewhere will enjoy a period of fabulous wealth, which may catapult them into modernity in a generation. But a large residue, including India, Pakistan, Bangladesh, and many smaller countries will have great difficulty in keeping much ahead of population growth, especially with key materials, including food, oil, and fertilizer, more costly. Hence their income per capita will rise slowly, and the gap between their poverty and the wealth of the advanced Western and the more fortunate semi-developed nations will widen seriously.

Moreover, all the LDCs, poor or semi-developed, are likely to undergo serious economic, social, and political turmoil, resulting either from the dislocations of extremely rapid change or from semi-stagnation and disillusion. The problems of the rural areas, rapid urban growth, population pressure, and breakdown of traditional values and institutions will create severe social tensions and disruptions. With easy global communication, the gap in incomes and conditions between the LDCs and the advanced nations fosters resentment and bitterness. For the advanced nations, one consequence could be extensive terrorism and sabotage by LDC extremists made desperate by hopeless poverty and seeking to force attention to their condition.

IV. IMPLICATIONS FOR FOREIGN POLICY TASKS

This effort to look ahead makes it clear that in the decades ahead international relations will be marked by change, complexity, and uncertainty. Whatever the ultimate outcome, the various forces and their interactions will surely reshape the environment and modify the outlook and roles of major actors and the relations among them.

Despite the uncertainties, some features stand out as especially critical for defining the direction and tasks of foreign policy.

1. The web of interdependence, though resisted, seems destined to grow stronger and more extensive as time passes. The reasons for that view have already been discussed.

2. The capacity to shape events or to assure economic well-being or secure peace will depend on collaboration among states. That is the practical meaning of interdependence, for the United States as for others. Yet in building a viable system, the U.S. will have a key role by reason of its resources and influence, which can often tip the balance one way or the other.

3. The requisite cooperation must inevitably include a wide range of other nations, depending on the problem or issue. For some purposes, such as maintaining peace, controlling conflict, regulating or reducing armaments, it must involve adversaries. For others, including global problems like the oceans, and many economic matters, the LDCs must join for effective measures.

Cooperation will have to be especially intimate,

extensive and continuous, however, among the advanced nations of Western Europe, Japan, and North America. With economies and societies so closely meshed, they will have to concert their actions in many fields, including security, the monetary system, trade, economic policy, investments, etc. And their leadership and initiative will also be essential in handling many global problems—such as resources, the oceans, pollution, LDC assistance—which involve a wider group of interested nations.

4. The required collaboration will have to take many forms. In some cases, the need will be to concert domestic or external actions among interested states. In others, it may be necessary to form new agencies, to strengthen existing ones, to manage or regulate or carry on activities on a regional or global scale. In any case, such joint programs and agencies will often require long-term commitments among the participating states, so as to assure continuity of operation and support.

5. Such intimate cooperation will be inherently difficult, especially for the democratic states. The matters involved directly affect the daily life and well-being of the average citizen through prices, food and fuel, growth, and jobs. These issues are the central core of domestic politics, on which modern democratic governments stand or fall. Thus the necessity to coordinate internal policy-making and administration closely and continuously with other nations or external agencies poses severe problems. Politically, it will be hard and costly to subordinate local interests or parochial attitudes to the needs for joint action. Practically, it is not easy to adapt methods of internal policy-making to this new imperative. Major decisions are usually the result of a cumbersome process of bargaining and compromise among groups and agencies with divergent purposes and interests. It is hard to inject the external factors into this process as it takes place or to adjust the resulting compromises to take account of them afterwards.

6. Compounding the difficulty will be the weakness or instability of governments or confusion about their roles and purposes over the decades ahead. As has been suggested, the prospect is that social and political forces or tensions will profoundly modify the institutions and outlook of the major states. The USSR will be subject to growing pressures at home and in Eastern Europe. The European Community may move toward greater unity and to a new role, or it may stagnate in fragmented passivity or weakness. In Japan, too, domestic and external factors will modify its society, its priorities, and its relations with the outside world. Among the LDCs, some will be achieving growth and social progress, others stagnating or suffering severe instability. China after Mao is unpredictable. Social and political forces in the United States will also influence its external role and its capacity for influence.

To overcome the obstacles to a cooperative, interdependent order would be a formidable task under the best conditions. The challenge is staggering when so many of the major states are themselves in ferment. It may indeed outrun the capacity and imagination of those who face it. In any event, it will certainly demand leadership and organization of very high quality.

In this perspective, the tasks of U.S. foreign policy in the coming decades will be two-fold: (1) to help build the processes and institutions for collaboration and order, and (2) to foster the evolution of the major states in ways conducive to a cooperative order. While the United States clearly can not assure these aims alone, the way it uses its resources and prospects will greatly affect their prospects.

V. IMPLICATIONS FOR MACHINERY

What does this analysis of future international relations imply for the conduct of U.S. foreign policy? What methods for making policy and carrying it out will be effective in meeting the requirements?

It will, I think, have to embody two features which are not easy to combine: (a) clear direction and continuity over time, and (b) extensive participation.

1. The leadership must come from the President. He stands at the intersection of all the various strands which must be integrated. He ultimately speaks for and represents the nation in its dealings with the outside world. He alone has the political stature in domestic affairs to obtain the concurrence of Congress and the electorate for necessary decisions. And he has charge of the Executive Branch, which must carry on the manifold activities not only through the State Department but through many other agencies.

The President's role is, therefore, central. But the key question is how he can fulfill it. Manifestly, what he can do directly is severely limited. The critical problem is how to extend his reach by utilizing and organizing the efforts and talents of others. To do so will require the reversal of the increasing tendency over the last decade to concentrate the making and executing of policy into a few hands. Some suggestions for doing this follow.

2. Foreign policy will have to be based on a coherent strategy or framework which is understood and supported by a consensus among the politically influential. Such a strategy would not attempt to blueprint specific actions for the future or to provide contingency plans. It would seek to set general

directions, to identify longer-term purposes and objectives, and to define priorities to be followed in day-to-day actions. Its aim would be to provide the framework and conceptions to guide the choices in making specific decisions and executing them.

Such a strategy is essential for several very practical reasons:

(a) A cooperative, international order will be built only by the cumulative effect of many actions over an extended period. Specific actions can contribute to that result only if they reinforce each other over time; that is, if they have reasonable consistency or coherence. Otherwise, erratic or conflicting actions will tend to cancel each other out and dissipate their potential for influence. Such consistency over time (or indeed at any time) requires some guiding sense of direction and priorities.

Not every decision will be able to conform fully to such a strategy. On occasion, specific considerations may require deviation, just as a sailor may have to tack. But like the sailor, the policy maker should be aware of the deviation and of the necessity to adjust his later actions to bring him back on the chosen course.

(b) In domestic politics, the Executive and Congress will be better able to resist or reject the claims of specific groups, when necessary, if they can justify and explain their action by reference to basic purposes which enjoy general support. This will not be a substitute for strong political leadership, but it can facilitate it.

(c) Such a strategy is also essential as a basis for joint action with other democratic nations. Their leaders will not be ready to use their political capital to obtain support for the joint course, often at the expense of parochial or short-term interests, unless they can count on similar action by their partners in other states. A shared strategy provides an element of continuity and predictability essential for such joint action. In practical terms, this is especially true in relations among the advanced nations. If Japanese or West European leaders are doubtful about U.S. objectives or priorities, they will not be able or inclined to press for the necessary joint measures.

3. Achieving an agreed strategy will not be easy, but it is not utopian. It will require effective machinery for policy planning in the major agencies, especially State, Defense, and the Treasury. Beyond that, the President needs a mechanism such as the NSC to provide the forum for debate and discussion of competing objectives and priorities.

Ultimately, the President must define and articulate such a strategy and undertake to persuade Congress and the public of the validity of the course and priorities it embodies. That was effectively done in the period after 1947 and largely guided policy-making for over fifteen years. Admittedly, the military threat and the U.S. predominance facilitated the devising of a strategy and the mobilizing of support both at home and among allies.

The task will be much harder in the emerging conditions. Lower tensions make it more difficult to identify clear priorities and assure their adoption in the domestic political process and complicate agreement with allies. On the other hand, there is growing awareness that interdependence is a fact of life which requires concerted action with others on many fronts, and that seeking independence, or the freedom to act unilaterally are illusory or self-defeating goals.

4. The real test will be whether a general strategy is reflected in the wide range of U.S. decisions and actions involving external relations.

In an interdependent world, the many and complex forms of cooperation and joint action inevitably require devolution of the carrying on of relations to many agencies. No one agency, such as the State Department, can possibly carry on all such activities or even the greater part of them. Many will require the expert knowledge and participation of other departments, such as Defense, Treasury, Agriculture, Interior, and Commerce, or other agencies charged with specific fields. Indeed, many of the issues will involve several such agencies for adequate coverage. This is, of course, the situation now, but it seems certain to intensify and become more complex. And few would claim that the present machinery or procedures are adequate.

The problem is to assure that these manifold activities follow a reasonably coherent or consistent pattern. Since most departments or agencies are mainly oriented to domestic problems and have a political constituency following their actions, the need is to assure that wider, long-term interests are not sacrificed for short-term or parochial concerns. The task cannot be done if the conduct of foreign policy is centralized too tightly in a few hands in the White House. Under those conditions, vast areas are neglected, cooperation with allies and others withers, and confidence is eroded.

Such oversight should be a primary role of the State Department. If suitably manned, it should be able to monitor the vast range of external relations which it could not feasibly conduct. In the policy making, it should make sure that broader interests are adequately considered in these areas. And, by generally overseeing them, its officers can, if need be, bring contested issues to higher levels for review and decision.

For such a system to work effectively, the Secretary of State must have a special status among his Cabinet peers on this range of issues. Clearly he cannot have final authority to overrule another De-

partment. Only the President can do that. But if the Secretary of State enjoys the confidence of the President, he will be able to resolve many such issues. Under such conditions Cabinet officers, who can appeal only a few disputed issues to the President, will be cautious about risking a defeat and using up their credit. And on many issues, the relevant Assistant Secretary can perform the same function.

Obviously, the role of the Secretary of State and his relations with the President and other Cabinet officers cannot be legislated. Ultimately these depend on the character and personality of the President and his view of his own role, and his choices of Cabinet members. Still, there is value in having suitable models of these roles and an understanding of the reasons for them. A President clearly is free to organize the White House and the functions of the Departments (and especially the State Department) as he sees fit. But many of the alternatives which are open to him are not compatible with the effective conduct of foreign policy. He should be assisted in realizing that on the basis of prior experience.

5. International and multilateral agencies of various kinds are obviously indispensible for cooperation in many fields. Their role will surely expand to provide forums for consultation and for concerting action, as well as to perform specific functions and operations for their members or the world community. At their best their staffs can help clarify and articulate the common interest and mediate among the various national concerns. They can also assure greater continuity in programs. Moreover, if they wish, national leaders can often utilize the programs and decisions of such agencies as an effective means for rallying domestic support for multilateral cooperation.

It must be recognized that existing agencies vary widely in their efficiency and usefulness. Many leave a great deal to be desired, with cumbersome procedures, swollen staffs, log-rolling decisions, and more concern with jurisdiction than results. But these shortcomings are not universal; some multilateral institutions are well managed and effective, despite the inherent obstacles.

A more systemmatic effort should be made to study the operation of multilateral and international agencies. This would serve to improve the effectiveness of existing ones. It could also develop guidelines for the structure and procedures of those created in the future. Some agencies probably within the Department of State should have the oversight of the functioning of international agencies as one of its main duties.

Towards an Open Foreign Policy

McGeorge Bundy
December 1973

This paper is submitted in extension and elaboration of propositions discussed informally with the Commission on June 25, 1973. In submitting it for the record I wish to express my warm appreciation to Francis Wilcox, the Executive Director of the Commission, for his kind invitation to take part in this study and also to the members of the Commission for the pleasure of meeting with them and the advantage of learning some of their concerns in direct discussion last June. This paper attempts to be responsive to the main currents of that discussion.

I

The Commission begins its work at a timely moment. Except for the nuclear menace, the preoccupying foreign problems of the last generation of Americans are unlikely to be those of the next. For a variety of reasons whose unifying element is the continuing acceleration of technological and industrial change, the assumptions and priorities of the last quarter century can no longer be relied on. The Commission, therefore, must do much more than review the effectiveness of the organization of our government for the tasks of the past. It must also reach out to attempt a perception of the requirements of a different age.

The changes which lie ahead are not so much in the replacement of past problems as in the addition of fresh ones. Indeed, a part of the complexity of the future arises precisely from the fact that it will be carrying so much of the past with it. The new phase in our relations with the Soviet Union is correctly based not on a rejection of the need to maintain effective deterrent military strength but rather on a mutual recognition of the common interest in a stable balance of power. President Nixon has been right in his insistence that the maintenance of that balance is a condition of the progress of recent years and of the prospect for further gains in the future, and the Middle East crisis of the fall of 1973 has dramatically underlined the continuing importance of what Secretary Kissinger calls the "ambiguous" relation between the two Superpowers.

More broadly, the new openings to China and the Soviet Union have not reduced the importance of our continuing connection, ever more intense and complex, with Japan and Western Europe. Those connections themselves have evolved in ways which are still imperfectly understood, and the international economic structure erected in the aftermath of the second World War is increasingly endangered, in large part by its own extraordinary success.

More broadly still, the agenda now confronting the United States, as the most important single member of the world community, has rapidly widened in recent years; one need only consider the new worldwide concern for questions of energy and the environment, of population and poverty.

It is a long distance from these great questions to detailed prescriptions for the organization of our government. In this statement I would like to speak not of details of organization and management, but rather of certain general implications inherent in the evolving world situation.

First, the major issues of the rest of the century will be increasingly *multilateral* in character. We shall still have need for traditional bilateral diplomacy, and in particular we will need to give the kind of attention to our bilateral diplomatic communication with all other nations which in recent years has been a casualty of excessive concentration of diplomatic authority inside the White House. But the reconstruction of international economic relations is no bilateral matter nor is the development of effective international action on environmental pollution nor the rational distribution of limited supplies of energy. And certainly there can be no merely bilateral approach to the social and economic development of the majority of mankind who still live at the edge of physical survival. Even in

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matters directly related to national security and the balance of power, the necessity for more than bilateral action increases; an obvious current example is the set of issues which goes under the name of European security.

The need for multilateral action has a general consequence for our methods of operation in foreign affairs which is, I believe, of high importance. What is multilateral must usually be open. I intend here no suggestion whatever that all the details of multilateral diplomacy must be instantly published. I mean rather that the process of such diplomacy is necessarily much more public than what is possible —and occasionally necessary—in bilateral dealings with dictatorships. In multilateral diplomacy it is necessary to work with governments whose standards of privacy are uneven, and the coordination of our relations with such governments requires the continuous inclusion of a number of officials well below the summit of our government. The diplomatic models for this kind of negotiation are likely to be found in such experiences as the building of the Atlantic Community twenty years ago or the Kennedy Round of the Sixties, rather than in those of lonely diplomacy with Peking and Moscow.

Another and equally decisive force for open behavior is the changing agenda of our international affairs. American policy toward the major items of this agenda cannot be framed or executed in a self-isolated White House. The question of energy, for example, engages a variety of important forces and interests within the Executive Branch alone. It is also of commanding interest to several Committees of the Congress, and it involves the immediate interests of major industries, and indeed of the individual consumer, much more intensely than the broad political questions of a balance-of-power negotiation. We cannot have an energy policy which is merely Presidential, nor can we construct one in secret.

The imperative of openness has obvious and far-reaching consequences for our foreign policy process. What is open is accessible both to supporters and opponents, and methods of diplomacy which depend heavily on secrecy and surprise are unlikely to be effective. Moreover, in open diplomacy no single agency, not the White House and not the Department of State, can hope to have the field to itself. Even the Executive Branch as a whole cannot expect to proceed as a self-contained unit.

Yet I am as far as can be from suggesting that these imperatives can or should lead us to believe in a reduction of the role of the Presidency. On the contrary, the central conclusion which I would offer for consideration is that the rising requirement of open diplomacy increases our need for strong foreign policy leadership in the Presidency. These new occasions have major implications for style and method, but they imply no diminution whatever of the primacy in foreign affairs which the founders correctly confided to the Chief Executive.

Indeed it is only the President who can give leadership to open diplomacy. Who else can insure the effective coordination of the Executive Branch? Who else can insist upon the development and the maintenance of a network of trusting communication between the Executive Departments and the Congress? From what other pulpit can the American public be directly engaged in a national effort to understand the new imperatives of a new generation? And who else can share and delegate the power to speak abroad for the United States?

* * * *

II

There are many theories of the American Presidency, and the style of the White House changes with every change of administration. But there is one element in the styles of the last ten years which, if I am right, will be profoundly out of place in the next twenty-five years—the apparent belief that there is an overriding need for secrecy and loneliness in the conduct of our major international affairs. This attitude is seldom supported by reasoned argument, and its validity needs careful testing. While there are indeed occasional instances in which at least temporary secrecy is critically important, the forces that have led our two most recent Presidents so far in the direction of mistrust, isolation, secretiveness, and consequent weakness are not easy to understand. In part they proceed from the inmost personal characteristics of the two men, and I do not think this Commission can frame its prescriptions around the personal makeup of two very unusual and different individuals. What may deserve your close attention, however, is the degree to which such attitudes of Presidents may be the product of real and persistent weakness in the organization of our government.

An important element in the agenda of the nation and of this Commission could be a careful review of the real importance or lack of importance of the attitudes toward secrecy which developed in the generation marked by the opening of the nuclear age and the fears of the cold war and which have reached their extreme point in the statements of President Nixon in 1973. My strong belief is that such a study would demonstrate that the number of matters which need to remain secret over anything but a short space of time is exceedingly small and that the balance of national advantage, both at home and abroad, rests with a presumption in favor of openness.

Because the subject is one with which for a time I was closely engaged and because its history is

frequently cited as evidence of overweening strength in the Presidency, let me here suggest that my argument may be most plainly demonstrated by the history of our deeply troubling engagement in the Vietnam war. There are many lessons in it, and the mode of learning, at least so far, has more often been hot debate than cool reflection, but my own conviction is that the history of the war in Vietnam, properly understood, will testify not to the dangers of excessive Presidential *power* but to the perils of *secretiveness,* which is something very different. Seen as a matter of simple power, I think the story of Vietnam will tell more about the weakness and internal division of our government, including its Presidency, than about any usurpation of excessive power by anybody. I know from direct experience that between 1961 and 1966 the dominant emotional reaction of the White House to the Vietnam problem was frustration, and while a great part of that sentiment derived from the intractable behavior of both friend and foe in Southeast Asia, a great deal more was the product of division, uncertainty, and a sense of limited ability to control men and events within the Executive Branch itself.

I believe history will conclude that none of our last three Presidents has felt fully confident of his capacity to command and control his own subordinates in relation to Vietnam, and that no matter what policy may have been preferable at any stage — further in, faster out, or something in between— that policy would have been better managed if command and control in the Executive Branch had been stronger. There are particularly significant questions, I think, about the relation between Presidents and military men, but there are lessons to be learned elsewhere as well. In this capital case, as in general, I believe evidence will show that the truly fundamental error has been to suppose that isolation, secrecy, and surprise are the preconditions of strength. I think all those involved, and especially the last two Presidents, would have gained in effectiveness by a more open and confident approach, first to the rest of the Executive Branch, second to the Congress, and third to the country.

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III

So I think it is usually a mistake to suppose that secrecy gives strength to foreign policy. In most cases, I believe, the strong Presidency and an open style are not enemies, but friends. I believe this to be true in at least six major areas that are of critical importance. These are, in no particular order, the Executive Branch, the Congress, the Press, the general public, the interested public, and foreign governments. Without attempting a detailed analysis of these different sectors and their meaning to the Presidency, let me suggest some of the reasons for openness.

The central requirement for an effective relation with each of these great forces is that there should be a sense of effective two-way communication based on trust. The shape of that trust will vary from one sector to another. In none of the six cases can we exclude the element of principled disagreement and in none, alas, can a President neglect the possibility of betrayal. But the right objective, in each case, must be the establishment and the zealous maintenance of a process of communication that is *mutually* reinforcing.

The President and the Press, to take a relatively simple but lively example, are natural adversaries every day on the shallow plane of short-lived secrets. They can also be deeply opposed to each other on major issues of policy, though the Press will rarely be monolithic on any large question. But the President who perceives the Press as intrinsically his enemy is a President who has condemned himself to an isolation that limits the strength of his office. That the same proposition may be reciprocally true for the Press is a matter as interesting as it is distant from this Commission's assignment.

The right posture for the President, in his relations with the Press, was well and clearly stated by James Reston, seven years ago. He correctly defined the central responsibility as the President's and the central requirement as one of attitude.

> "The attitude of the President toward the reporters is vital. If he regards them primarily as a problem and therefore tries to manipulate them, they eventually convey their suspicion and even hostility to the people. If, on the other hand, he regards them *as an opportunity* [emphasis added] and tries to explain his problems to them, they can be a valuable educational force. It is the President, however, who has the initiative and the capacity to define the rules and set the tone of public discussion." [2]

Mr. Reston was writing in early 1966, before the worst of the "credibility gap" which so severely weakened Mr. Johnson, and long before the self-imposed isolation which has contributed so powerfully to a state of profound mutual mistrust between Mr. Nixon and the Press. His words were prophetic.

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IV

But the two most immediate areas of concern for this Commission are the relations between the Presidency and the Executive Branch and the relations between the Executive Branch and the Con-

[2]James B. Reston, "The Press and Foreign Policy," *Foreign Affairs,* July 1966, p. 572.

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gress. A Commission whose collective experience is broad and deep will hardly need a reminder that these relations, in any Administration, are sensitive and complicated. Representative government, in Theodore Lowi's words, is "the most complex and delicate type of political organization that has yet been seen in world history." And in the American case, the problem is compounded by our constitutional and institutional commitment to the Separation of Powers. The difficulties here are legion, and nowhere more troubling than in foreign affairs. It is extremely easy for Presidents, Senators, and foreign policy professionals (whether in the State Department, the Pentagon, or the Treasury) to give up on the complexity and difficulty of relations with Congress and to try to "go it alone." But that does not work—not in the long run.

The requirement of long-run connection between the Executive and the Legislative Branches is most vividly demonstrated by the issue of War Powers. I believe that the War Powers Resolution, enacted in November 1973 over Mr. Nixon's veto, is a most important signpost for the future conduct of our foreign relations. That Resolution and its overriding majorities testify with great authority to Congressional and public dissatisfaction with recent Presidential style in matters of war and peace and not only over the critical case of Vietnam. Much of this distress is explained by retrospective disillusionment with policies warmly supported at the time they were adopted, and the fact that a Presidential veto was overridden on this crucial topic also owes something to the uniquely low estate to which the Nixon Presidency had fallen under the unending deluge of Watergate. But I believe that the central and decisive sentiment behind these heavy votes was a strong and growing Congressional resentment against the secretiveness of the Executive Branch. "Tell us what you are doing and why"—this is the central message of the Resolution.

It is by no means clear that the Resolution seriously limits Presidential discretion to act alone at the beginning of a conflict, and the record shows that many of its supporters had no such intention. I do not go as far as those who believe the Resolution may liberate a President to do things he could not do before, nor do I believe it likely that it would have prevented either good or bad decisions of the past if it had been enacted long ago. What I do believe is that it constitutes a powerful encouragement to serious communication between the President and the Congress, and as such I believe it to represent a sound reading of recent historical lessons and an excellent indication of the kind of change we now need most in relations between the Presidency and the Congress in foreign affairs.

Moreover I believe the War Powers Resolution indicates the means as well as the direction of useful reform, in that the initiative came from the Congress. I believe that the White House and the State Department should have welcomed the resolution instead of opposing it, but they did not, and there is a lot of historical evidence (much of it powerfully marshaled by Mr. Arthur Schlesinger in *The Imperial Presidency*) that Administrations, even when led by men of quite open personal temper, are not self-reforming in this respect.

There are at least two other areas in which the Congress could usefully act to increase the information it has. One is the rising insistence that agreements and commitments made by the Executive Branch to foreign powers need not be honored by Congress if they are secret. While the Senators and Congressmen especially concerned with these efforts have until recently encountered as much frustration as success, I believe that both time and opinion are increasingly on their side; by their persistence they are gradually tilting the balance of preference in the Executive Branch itself and the preference of foreign countries too. I believe that secret diplomacy will increasingly be limited to truly exceptional cases, and it is both interesting and hopeful that most of those who are leading in the Congressional effort to achieve a more open situation in this field are men who cannot be accused of isolationism.

The other area in which Congress can well do much more to balance the scales in its relation with the Executive is that of information about the rest of the world. With billions appropriated by Congress, the United States maintains what is easily the largest, and in many ways the best, worldwide information gathering system in the non-Communist world. Only a small proportion of that information needs to be tightly held. There are a very few facts which deserve intense protection; most of them relate to the means by which information is received. Very occasionally, moreover, the protection of a source requires the protection of information that might point a finger at the source or if we have broken a code or placed a covert agent abroad; information that might cause the code to be changed or the agent to be discovered deserves some protection (though this rule can never be absolute).

Another kind of work done by intelligence officers also deserves a presumption of privacy: the work which responds to the need of officials for advice relating to decisions they have under consideration. If the Secretary of State wants an estimate of Arab reactions to possible acts of retaliation for the oil squeeze of late 1973, he is entitled to receive reports which are not instantly shared with Congress. The privacy which is often necessary in the decision-making process properly extends to

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intelligence estimates which are generated in that process.

But these exceptions are *exceptions.* The general rule should be very different. It is a conservative estimate to say that 98% of what the Executive Branch learns about the rest of the world can be conveyed to Congress in a form which does no damage whatever to the national interest.

The Congress has the means to ensure that it gets this stream of information and gets it in a usable form. Not only does it control the money that fuels the intelligence agencies, but the agencies themselves contain large numbers of skilled professionals who would like nothing better than to provide this kind of information. Indeed, in specialized ways large amounts of valuable information about the rest of the world already reach some Committees from some agencies. Much of this information is tainted with a special interest, in that intelligence officers seldom minimize data which tend to support the budgetary desires of their own agencies; they also tend to be particularly helpful to those members of Congress whom they perceive as helpful to them. Nonetheless there is an important constructive aspect to the human desire of almost all our intelligence services to widen their constituency of satisfied consumers.

Few things would do more to restore balance and to make communication more serious than for the Congress to insist on the establishment of a new level of quality and quantity in the reports its members are able to require from the information-gathering agencies of the government, all the way from the CIA to the Bureau of Foreign and Domestic Commerce. Congress does not need to know what codes are broken, or what estimates the Secretary of State has asked for. It does need to be free to ask for the best available information on the armed forces of the Soviet Union, on the internal politics of Greece or Cuba, on the world food outlook, on the movements of crude oil, and on the current situation in Cambodia. And if, as often happens, the government's information is uncertain and the estimates of its experts various, the Congress can usefully know that too.

The ways and means of conveying this mass of information are not simple. There is a big difference between responding to substantial Congressional need and becoming entangled in writing long reports in answer to every whim of every single member. Moreover, any effort of this kind will involve trial and error, and occasionally the information thus provided will be used in ways that embarrass the United States (and not just the Administration, which is something different). But experience suggests that the Congress is not habitually careless about its procedures in dealing with genuinely sensitive matters; the Executive Branch has no monopoly on the sobering experience of decision making in the nuclear age. I am convinced that continuous Congressional access to our Government's information about external reality can be arranged, and not just for a favored few, whenever the Congress really wants it, and I think few changes would do more to restore mutual confidence between the Executive and Legislative Branches.

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V

The Congress is of course not the only party which needs to give attention to the reconstruction of the Executive-Legislative relation. But before the Executive can do very much about this matter, there must first be a reversal of certain dangerous trends of recent years within the Executive Branch itself. The temptation to "give up" on Congress has been matched in the White House, at least in recent years, by a growing tendency to "give up" on the Executive Branch itself.

Although I think this kind of surrender is the least justified of all, the temptation involved is understandable. Seen from the White House, the bureaucracy can be a trying institution, and there are interesting special reasons why it may be more irritating to Republican than to Democratic Presidents. But to surrender to this irritation is even more self-defeating, and mutually shriveling, than to accept a relation of distant and hostile mistrust with the Press or the Congress. The right way to deal with the bureaucracy, at least in the field of foreign affairs, is to get close to it, to use it, and to build persistently and sympathetically on its own almost instinctive desire to turn toward the sunlight of Presidential leadership.

While it did not originate secretiveness, isolation, or mistrust, the Nixon Administration, in its first four and one half years, carried them all to new heights—or depths. Fortunately, the President has now taken a step of great potential value in his appointment of Henry Kissinger to be Secretary of State. Because the Secretary of State, under the President, is both constitutionally and traditionally the senior officer of the Executive Branch in the management of foreign affairs, it is an act of high bureaucratic promise to join that office to the man who most clearly holds the President's trust in foreign affairs, and exactly the same point applies, for exactly the same reasons, in respect to relations with Congress. Mr. Kissinger will need new colleagues, and he himself will need a new openness, but his new office gives him every chance for both. Of his natural gifts and his capacity for growth there can be no doubt. And he himself has come as near as a loyal subordinate can to an acknowledgment

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that his acquiescence in the disgraceful wiretapping of his colleagues and friends in the press was a mistake which does not reflect his future intentions. His commitment to a new policy of open diplomacy deserves every benefit of understandable doubts.

The appointment of Dr. Kissinger underscores a more general point about the Executive Branch: the central importance of the Cabinet officer and not just the Secretary of State. One of the most astonishing phenomena of the years of our permanent engagement in world affairs has been the increasingly intermittent effectiveness of those members of the Cabinet—the Secretaries of State, Defense, and the Treasury at a minimum—who should be, individually and in concert, the President's most powerful and valuable associates in the conduct of foreign affairs. Ever since Franklin Roosevelt lost confidence in Cordell Hull, the occupants of the White House, more often than not, have contented themselves with ad hoc arrangements designed around major weaknesses in the Cabinet. The mutually confident relations of Kennedy with McNamara or Dillon, Johnson with Rusk, Truman with Marshall or Acheson, and Eisenhower with Humphrey have been the exception, not the rule. I do not know just why this should be so, but I do know it deserves correction, and I believe a beginning toward that correction can be made if incoming Presidents and those whom they consult can be helped to understand that it is a false and misleading doctrine which asserts that Cabinet-making is an operation more for show than for use. Cabinet officers need to have exactly the "extra dimension" in the work of the government which Mr. Nixon asserted in words and then denied in action.

The Cabinet officer has at least two kinds of importance which are critical to my argument for openness. The first and most obvious is that the Cabinet officer is the indispensable agent of mutual trust between the President and the Executive Departments. The White House staff and agencies like OMB have roles of their own in helping the President to do *his* job, and they can often be useful also in the general process of internal communication. But while they can complement and reinforce a good relationship between the Presidency and a major executive agency, they can never create one by themselves. For that the Cabinet officer is the indispensable man. He works for the President, and the Department works for him. If these two propositions do not hold, because one relation or the other is inadequate, the President's need for action, combined with the natural tendency of any bureaucracy to by-pass weakness, will tend to produce a distorted and eventually enfeebled process of executive action.

I pause here on a point which is partly one of personal privilege. I do not believe at all that there is any necessary conflict between the functions of a senior White House staff officer and those of a Cabinet member. On the contrary, I believe that when the roles are correctly understood, the White House staff can be one of the most valuable instruments available to a strong Cabinet officer for the discharge of his own duties. White House people will not often get, or deserve, the estimate that Henry Stimson once made of Harry Hopkins, that he was a "godsend," but the notion that the relationship is necessarily one of rivalry is deeply wrong. Among those who have worked in the White House in less secretive times, it is not weakness but strength in the Cabinet that is remembered with affection.

I am assuming here that such Cabinet strength is at the service of the President. I am not so naïve as to suppose that a Cabinet officer either can or should neglect the special constituencies, in Congress or in the country, which look to his Department with expectations of their own. It is self-evident that a Cabinet officer will often come to the White House, both to the President and to the staff, to claim consideration for interests that are not in themselves Presidential. But it is not naïve to say that the really good Cabinet officer is first and foremost an extension of the President's own right to govern. If he cannot be that, he should remove himself or be removed, and nothing, except secretiveness itself, has damaged the Presidency more in the years since 1940, than the reluctance of Presidents to act upon this cardinal truth.

It may be worth a paragraph here to note that there is a world of difference between the Cabinet officer and the Cabinet as a collective instrument. The former is, or should be, a pillar of the State; the latter is at best a façade. Here again, Colonel Stimson's description of Cabinet meetings under Franklin Roosevelt is worth remembering: "no earthly good." That is the rule, not the exception. Consultation at Cabinet level among colleagues who share in a complex problem is quite another matter, and a wise President will meet often with groups that are large and knowledgeable enough to let him hear the full range of opinion on questions he must decide. But the Cabinet collectively (like the National Security Council in its formal membership) is essentially an empty vessel.

If the first function of the Cabinet officer is to serve as the main line of counsel and action between the President and his Department, his second role is hardly less important: it is to serve as the senior spokesman of the Administration, short of the President, in dealings with the Congress. This would be so obvious as to be banal if it had not been true so often, in the last twenty-five years, that the Congress has been unable to feel confident that a given Cabinet officer really could be counted on to

speak with accuracy and authority to the policies and purposes of the Administration. Sometimes, as already noted, Cabinet officers have lacked the necessary standing with the President himself. At other times, most unhappily, they have been constrained by the secretiveness of their superiors. And in a few cases they have themselves neglected the Congressional aspect of their work or have allowed their pride to limit their effectiveness in talking to men and women with a well-developed pride of their own.

Never mind, all these troubles and failings only underline the obvious: the Cabinet officer who succeeds in winning and holding the trust of Congress is a colleague and subordinate of rare and special value, providing only that he does it as the *President's* Cabinet officer and not by setting himself apart from the White House.

The Cabinet officer, indeed, together with his Presidentially-appointed subordinates is probably the most important force available for the general reconstruction of relations between the Executive and Legislative Branches. It is within the power of any determined Secretary to see to it that Congress finds his Department open, responsive, and generally helpful in the provision of information Congress has a right to have. Moreover, the Cabinet officer himself is a better witness on policy matters and on what the Administration is doing and why than all the documents in his Department. He is, or at least he ought to be, the living answer to the somewhat sterile and unrewarding struggle over what is or is not protected by executive privilege.

The concern over executive privilege is the product of the same deep and understandable mistrust as the War Powers Act, but the remedies usually put forward are not well designed to achieve their ends, and they contain real dangers. Usually they are directed at the production of documents prepared "for internal use only," on the hypothesis that such documents will tell what an Administration would otherwise wish to conceal. The hypothesis is well founded: no Administration wants to share its internal papers with outsiders. But if there is ever a general requirement that all such papers be produced on demand, the government will cease to do its internal business in writing, with predictably catastrophic results. So I believe there is no general right of access to particular papers unless they are needed as part of a judicial or quasi-judicial inquiry. There is, however, a right to information. The officer with the power to see that the information is provided, while the legitimately private papers are protected, is the Secretary. Of course he must have a President who wants it that way, but he is the one who can be cross-examined, who can respond for the record to direct questions, who can see to it that while confidential records remain confidential, the decisions and policies of the government and its reasons for them are fully shared with Congress.

One of the advantages of the Congressional and Cabinet behavior I have been urging is that it would further undermine the tattered myth of an executive monopoly of information. It is often asserted that one of our troubles in recent decades has been the tendency to assume that "the Government (or the President) knows best", that only those at the top know "all the facts" and that therefore their judgment must not be challenged. This tendency has undoubtedly existed, although I think a much more powerful force for inertia in the face of Presidential policy making has been a general lack of desire to share in the risks of difficult decisions. Politicians who want to keep clear of a dangerous issue often plead ignorance as their excuse. But whether real or pretended, the belief that "only the President has the facts" is rarely justified. Our national discussions and decisions will be healthier if this claim—or pretense—can be decisively weakened, and I think the kinds of actions I have been urging could not fail to have this helpful effect.

While I am discussing what a Cabinet officer can do to ensure good relations with Congress, I should emphasize one other point which many observers have noted and on which little has yet been done: the great Executive Departments need internal reform, and none more than the Department of State.[3] The State Department, like the Pentagon and the Intelligence Community, is almost surely too large, and in all these places sheer bureaucratic mass tends to dull the process of thought and action on serious matters. It is just this sluggishness which so easily persuades impatient Presidents—and others—that they can do it better themselves.

Much of the impetus for the needed reform here must come from executive energy in the Cabinet officers and agency heads concerned. But there is also need for help from Congress. The State Department, in particular, has been hampered for years by penny-wise, pound-foolish oversight of its appropriations. True reform, designed to liberate the talent and energy which undoubtedly exist in that Department, would require a new mutual trust in place of the mutual suspiciousness which has existed for so long. I believe it is a safe bet that with a combination of strong administrative leadership and knowledgeable cooperation from Congress, the State Department could become smaller, faster, stronger, and less costly, all in a relatively short time.

* * * *

[3] I think the most serious study is that of I. M. Destler, *op. cit.*, with a supplemental chapter forthcoming in paperback.

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VI

Finally I return to the President himself. I have already affirmed my continuing and unshaken conviction that we need strength in the Presidential office. When the Congress is fully informed and the Cabinet is powerful and loyal, the country will still look to the President as to no one else. This is as it must be. The foreign policies of the United States are never stronger or clearer, in the long run, than the understanding of the American people. The President cannot lead the way alone, but there can be no leadership without him; the most sapient Committee and the most sophisticated Secretary are helpless in the face of great tests unless the President is there to lead the country. And that leadership too must be open.

* * * *

VII

The Congress, which uses its power to extract information about the world, and the Cabinet officers, who use their power to explain what is happening and why, together with a revived and a reopened Presidency, can turn the country toward a new and justified confidence in its conduct of our world affairs. We must not underestimate the difficulties, but we can hardly overestimate the advantages, of such a turn. We shall face many trials in dealing with the issues of the next decades, but because of the kinds of issues they are, and the kind of people we are, we have no choice but to face them openly. To do that we must part company, radically and systematically, from the corrosive conviction that the secret of our strength lies in secretiveness.

Appendix B: The Management of Global Issues

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Introduction

Appendix B contains a major study carried out for the Commission under the direction of Joseph S. Nye and Robert O. Keohane. This study, "Organizing for Global Environmental and Resource Interdependence," is one of a series making up the Commission's research program, intended collectively to assess the adequacy of current organizational arrangements for the conduct of foreign policy in several substantive areas of particular importance.* It consists of a summary paper and a number of analytic studies.

Many "Global Issues"—problems arising from pollution of the oceans and atmosphere, weather modification techniques, resource and communication satellites, the growth in use of nuclear reactors, and food/population dynamics—may present great opportunities or radical dangers, but one of their characteristics is that these are not likely to be obvious to top policymakers at the time when major policy choices may need to be faced. The study shows how modest organizational changes coupled with several new but not radical procedures might produce substantially more accurate and timely warning of these problems, and generate early and focused efforts to deal with them.

The study is particularly interesting in its proposal to use the scientific community outside the government as a systematic source of early warning, and its devices, especially the so-called "critical list," intended to politicize and thereby amplify concern about such issues. The relative roles of the Executive and Congressional branches, and within the Executive, of the White House and the various departments are discussed; the important position of the State Department is noted; and various changes in State Department organization—most of them probably desirable for other reasons as well—are proposed.

*The other three studies in this series are printed in Appendices H, K, and V.

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Organizing for Global Environmental and Resource Interdependence

Robert O. Keohane and J. S. Nye
April 1975

I. THE ISSUES AND THEIR ORGANIZATIONAL IMPLICATIONS

A. Global Systems Issues and Interdependence

Recent years have seen an increase in the number and scope of issues on the foreign policy agenda. Moreover traditional notions of national security are no longer adequate. Protection against military threats will remain a major problem of foreign policy, but national security can also be endangered by events outside the politico-military sphere. A melting of the Arctic ice cap; a depletion of the ozone layer; a leakage of radioactive wastes; or a continual world population explosion could threaten the security of American (and other) people as seriously as many occurrences that could arise in the traditional military-political realm. As Secretary of State Kissinger said in his January 24, 1975, speech at Los Angeles:

> Progress in dealing with our traditional agenda is no longer enough . . . The problems of energy, resources, environment, population, the uses of space and the seas, now rank with questions of military security, ideology, and territorial rivalry which have traditionally made up the diplomatic agenda.

Concern about problems such as these prompted the staff of the Commission to suggest that we assess governmental performance in areas of global environmental and resource interdependence, and make recommendations for organizational changes, as part of the more general effort to evaluate arrangements for the conduct of American foreign policy. In conjunction with the Commission's staff, we agreed on eight "issue areas" that seemed relevant to foreign policy, that were all affected by patterns of *physical interdependence* crossing national boundaries, and that were not addressed directly by other studies being carried out for the Commission. Background papers were commissioned on these issues and are listed in Annex A. Table 1 lists the issue areas for which papers were commissioned, characterizing them in terms of scope and magnitude of effects. It also indicates whether major adverse effects on the United States transmitted through physical or through social processes, seem likely enough by the turn of the century to give cause for concern now.

The second column of Table 1 indicates that adverse current *physical* effects on the United States of developments in these issue areas are relatively minor. In some cases, however, American interests even now may be adversely affected by human actions related to these problems. Unfavorable outcomes in the Law of the Sea Conference could restrict the ability of American fishermen, scientists, and the Navy to use the oceans as freely as they have previously done. The development and sale of nuclear reactors could well contribute to nuclear proliferation, with its attendant dangers. Moreover, Americans have humanitarian concerns which are adversely affected by disasters such as starvation abroad, quite apart from longer-term economic, demographic, and political effects.

Yet it is the last two columns of the table that indicate most clearly the significance of these issues. Developments in four of the areas could lead, by the first two decades of the next century, to adverse *physical* effects to the United States, and *all eight* carry the danger of adverse socially transmitted effects. In the pollution, weather modification, and nuclear reactor cases the possibilities of environmental deterioration or even catastrophe are obvious. Insensitive uses of resource and communications satellites for United States purposes, while not leading directly to physical threats to the

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TABLE 1.—EIGHT GLOBAL SYSTEMS: NATURE OF PROBLEM FROM U.S. POINT OF VIEW*

Issue Area:	*current geograph. scope of problem*	*Current danger of adverse effects (1970s) to U.S.*		*Are major adverse effects enough in 2001–2020 to give cause for concern now?*	
		physically transmitted	*socially transmitted***	*physically transmitted*	*socially transmitted*
Oceans Pollution	principally coastal; neighbor states	minor	moderate (political antagonisms)	yes	yes
Atmospheric Pollution	principally neighbor states	minor	minor	yes	yes
Weather Modification	scattered areas; Arctic	minor	minor	yes	yes
Resource Satellites	global	none	minor	no	yes
Communications Satellites	global	none	minor	no	yes
Nuclear Reactors	nearly global	minor	major (nuclear proliferation)	yes	yes
Food	South Asia; Africa	none	moderate (US reaction to starvation abroad)	no	yes
Population	global; especially Asia; Mexico	none	minor	no	yes

*The problems listed are illustrative of "global systems issues," but others such as fisheries or chemical and biological research, could have been chosen. Global systems can present major opportunities as well as problems.

**By "socially transmitted" we mean "transmitted by processes involving human choice and human action." These may be economic or political processes; but they may also involve humanitarian reactions based on moral feelings and conceptions.

United States, could lead to various types of retaliation by governments reacting to American policies. An unrestrained population explosion, accompanied by widespread famine, would disturb the consciences of many Americans. The ensuing disruption would be likely to force a choice between making major sacrifices or attempting at great cost and questionable effectiveness to isolate people in the United States from billions of fellow human beings abroad.

The current evidence that all these future threats will occur is far from clear. Many of the disasters that we imagine may never come about. On the other hand, our argument does not rest on such dramatic simplifications as those of the Club of Rome,[1] but on the more modest proposition that an essential task of foreign policy consists of reducing uncertainty and arranging appropriate insurance against events with low probability but very high potential costs. In a number of these issues, the probabilities of future disasters do not seem trivial; in some cases they appear quite substantial. Furthermore, events within each issue-area may affect one another, thus compounding the difficulties and complexities, or increasing chances of disaster. Solutions to food problems, for example, may involve heavy use of fertilizers and pesticides which increase environmental pollution.

This report focuses on issues of physical interdependence that are potentially global in scope. These issues share, in varying degrees, an origin in the "unity of nature." The interdependence among countries is imposed in part by physical processes that transmit substances and messages across national boundaries or by the finite nature of the resources available to man. These physical effects, however, are greatly amplified by social and political behavior. Some countries, or some people within countries, may be able to avoid or diminish adverse effects for themselves due to wealth, power, or peculiar geographical circumstances. In some

[1]The discussion of global crises in the Second Report to the Club of Rome (Mihajlo Mesarovic and Edward Pestel, *Mankind at the Turning Point*, New York, Dutton, 1974) is more balanced and more credible than the first report (D. Meadows *et.al.*, *The Limits to Growth*, Washington, Potomac Associates, 1972).

issues arising out of global ecological systems, all countries are similarly vulnerable because physical effects spread themselves evenly around the globe. On other issues, such as resource constraints arising from population growth, vulnerability is very unequally distributed.

Enthusiasts of interdependence sometimes portray global ecological problems as the typical case and write as if physical imperatives will dictate adaptive international organizational responses. Interdependence is portrayed as a positive force bringing nations together in cooperative structures. But interdependence can also generate conflict. Moreover, states can respond to interdependence in several ways: (1) by unilateral national action, (2) through bilateral or regional arrangements, (3) through global multilateral organizations, or (4) through some combination of these. Where physical effects occur unevenly, interdependence may create conflicts among governments and within societies. And even where physical imperatives seem to dominate, since everyone is similarly affected, there may be conflicts over the distribution of costs, particularly where fragmentary evidence is weighed differently by different parties. In the case of the SST, for example, United States' views (particularly in the Congress) differed greatly from those of France, Britain, or the Soviet Union.

In short, there are conflictual and cooperative aspects to all issues of interdependence. As Thomas Schelling points out in his paper for this project,[2] these cooperative and conflictual dimensions of interdependence tend to be closely intertwined, and the conflicts spill over into other areas of foreign policy. The organizational implication is that issues of global environmental and resource interdependence are not easily separable from other economic and security aspects of foreign policy. Rather these issues will be at the heart of foreign policy in coming decades, and this will have to be reflected in organizational arrangements.

B. Organizational Implications of Global Systems Issues

These issues share four characteristics, although any one is not unique to these issues alone. First, as emphasized above, the potential catastrophic effects involve uncertain probabilities and long-time horizons: Given the normal short run focus of bureaucracies ("the urgent tends to drive out the important"), this means that these are issues for which the sense of priority in the bureaucracy is generally less than their long-term importance deserves. Second, the future uncertainties surrounding the issues in this study are highly sensitive to changes in science and technology, both in the generation and abatement of problems. Policies designed to deal with these problems are closely related to more general questions of science and technology policy. A third characteristic of these issues is that they involve major domestic as well as foreign policy implications. This means that they cross jurisdictional lines within governments and raise difficult problems of coordination of domestic and foreign constituencies. Finally, diplomacy on these issues is frequently carried out in multilateral forums and through international organizations. This implies that specific issues, such as those within the issue-areas listed in Table 1, often become linked in these organizations to larger questions such as global equity between wealthy, industrialized countries and poorer countries.

These characteristics of global environmental and resource issues suggest two major organizational problems that must be solved. The long run dimension of the problem requires mobilizing scientific knowledge to provide warnings *and* creating conditions that ensure an adequate response to carefully prepared warnings. Thus an open and bias-free scanning and forewarning system must be accompanied by organizational measures that encourage paying attention, at an appropriate level, to long-term interests and dangers.

In the short run, the chief organizational problem involves coordination of complex issues in such a way that collectively shared interests prevail over partial or narrowly-defined interests, and that diverse constituencies (both domestic and foreign) are ensured appropriate inputs. This is particularly difficult when the number of groups or agencies affected by policy is very large, and when decisions must be made without interminable delay. Coordination may be especially elusive when the issues are not generally perceived as posing foreign policy problems at all! For example, the domestic use of agricultural pesticides or spray cans containing freon gas, hardly appears at first to have international implications, but they do.

The multilateral dimension of these issues has two major organizational implications. In the first place, discussions in international organizations may raise issues that United States officials have not considered, or reveal new perspectives from which the problems may be viewed. It is important for the structure of the United States Government to be so designed that agencies dealing with a particular set of issues are sensitive to other governments' views. This implies that U.S. delegations to international conferences, and policy-makers at home should be both politically and technically sophisticated. In

[2]Thomas C. Schelling, "Environmental Concerns and International Conflict," Appendix B, twelfth paper, of this volume.

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turn, this necessitates close cooperation between technical, operating agencies of the Government on the one hand and the Department of State on the other.

The multilateral dimension of these issues also introduces new complexities into problems of coordination, since it means that positions taken in international organizations on one set of issues should be consistent with positions taken on others. Since different networks of individuals and agencies are involved in international organizations in different issue-areas, ensuring consistency may not be easy. Were the United States to develop a coherent policy toward economic equity demands of less developed states—for example, a "global equity bargain" between North and South—positions on particular issues would have to be brought into line with that general policy, and *vice versa.* Even in the absence of such a grand strategy, however, some degree of consistency between American positions on different issues is necessary.

There are no perfect solutions to these problems, and those we suggest below are not foolproof. Many of the details of our proposals can probably be bettered. However, it is worth emphasizing the central premises of our approach, because they help to explain why we have rejected certain alternative solutions. The typical governmental solution to a new problem is the creation of a new bureaucracy. As global environmental and resource systems have become more important, there have been various suggestions for new domestic agencies and international organizations. Such suggestions are too static to cope with rapidly changing processes. Moreover, bureaucracies develop interests of their own. Rather than providing a solution, they may contribute to the problem. In the realm of coordination, bureaucratic solutions often wind up adding one more layer to the problem. In matters of advance warning, bureaucratic solutions often mean the development of vested interests which compound the difficulty of assuring attention to discovering what we do *not* know. For advance warning, the organizational puzzle is how to establish a broad gauged detection and amplification system without developing a large bureaucracy. For coordination, the puzzle is assuring central supervision without a large central bureaucracy. Thus in our suggestions below, we do not propose a "Food Czar" or an "Atmosphere Czar." Nor do we subscribe to proposals to create a new bureau analogous to NASA or the Arms Control and Disarmament Agency for global interdependence issues. We do not recommend a massive planning bureau or research agency for these issues either at the domestic or the international level. In general, while we include structural suggestions below, we are more concerned with policy process than with structure. Imaginative channeling of the policy process can substitute for elaborate bureaucratic structures.

The political process plays an important role in our recommended solutions. We noted above that many of the issues of global environmental and resource interdependence are closely related to issues of science and technology. It does not follow, however, that policies for them are the same thing as "science policy," or that preferred solutions are purely "technical." Politics can play an essential positive role in policy formation. Particularly for issues with long time horizons, a certain degree of politicization may be a necessary condition for proper attention. Politicization in the sense of the generation of controversy and hence attention can come from broad bureaucratic, Congressional, public, or foreign government involvement. Obviously, there are pathologies of "overpoliticization." In general, however, our recommendations treat public politics as a potentially positive part of the organizational solution, not merely as an irrational nuisance as it is sometimes regarded.

The analysis and recommendations that follow are organized around the two major tasks that we have identified above: (1) long run forewarning; and (2) short run response and coordination. In the next section we describe a future-oriented scanning process that does not rely on a new super-bureau but is based on the participation of a broad range of social groups and a major role for Congress. In the third section, we describe a process for coordination across domestic and foreign bureaus that eschews a super-bureaucracy by relying on a procedure similar to the National Security Council study and decision memoranda in conjunction with a functionally reorganized State Department.

II. LONG-TERM SCANNING

A. Current U.S. Procedures for Long-Term Scanning

Advances in science and technology help to create new global issues, whether by threatening the environment (e.g., atmospheric and oceans pollution); putting new instruments into the hands of policy-makers of specific states, thus potentially threatening others (e.g., weather modification); or providing new solutions to problems (e.g., the "green revolution" in food and new contraceptives in the population area)—which may themselves generate social, economic, and political issues.

The importance of scientific and technological change for these global systems issues is accen-

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tuated by the fact, as we indicated above, that many of the social and physical processes involved have long-term, cumulative effects. Pollution of oceans or atmosphere, and food shortfalls in the wake of population increases, cannot easily or quickly be corrected. Effects of allowing the ozone in the atmosphere to be depleted, or population growth during the next two decades to continue unchecked, will persist for many decades to come.

Organizing for "global systems" issue-areas requires systematic scanning procedures so that policy-relevant new knowledge is generated, and made accessible and understandable to decision-makers well in advance of crises. "Muddling through," with marginal responses to perceived error, and last minute reactions to unforeseen crises is unlikely to yield satisfactory results.

Planning in the United States Government on these issue-areas is clearly inadequate. According to the authors of papers prepared for this project, long-term interests are frequently not weighed satisfactorily. Long-term interests are often driven out by immediate issues. With respect to oceans environment, Hollick states flatly that "long-range planning is not undertaken."[3] Writing on food questions, Hopkins states that "the capacity of foreign policy makers to anticipate the possible dangers and probable outcomes on food issues, from the U.S. point of view, is weak."[4] On weather modification and satellite technology, the key problem appears to be that planning is concentrated virtually exclusively in the technical agencies, and does not, therefore, focus sufficiently on foreign policy implications of scientific change.

In every one of the issue-areas, changes in patterns of knowledge and knowledge-availability are needed. What is required, however, is different from one issue-area to another. In the weather modification, nuclear energy, and satellite technology fields, what is needed is greater availability of information to central foreign policy officials to enable them to monitor developments and assess the foreign policy implications. In the oceans and atmospheric pollution areas, knowledge is needed to assess the effects of human activity on these natural systems, and how deleterious impacts can be minimized. On food and population issues new knowledge is essential to devise adequate solutions to the problems themselves, as well as for monitoring developments and assessing the economic, social, and political consequences of proposed and existing policies (such as that of an international grain reserve). For example, long-term solutions to the food problem will require increasing production in poor countries, yet relevant research in AID is inadequately funded while heavily funded Department of Agriculture research is oriented toward domestic American problems.[5] Moreover, little attention has been devoted to the environmental implications that high intensity agriculture might have in densely populated poor countries. It is clear that despite the fact that problems relating to science and technology are important in a variety of issue-areas, what is required, specifically, varies from area to area depending both on the nature of the problem being dealt with and the decision-making process for the issue-area.

B. Long-Term Planning: An Extensive System

There are two basic problems having to do with acquiring and using knowledge in these global systems areas: 1) the creation of *policy-relevant* knowledge; and 2) providing institutional procedures by which this knowledge, in usable form, captures the attention of busy policy-makers. The policy-maker should be seen not merely as a student who is told by scientists what he or she needs to know, but as an active participant in designing institutional arrangements that will produce, identify, or package relevant knowledge. On the other hand, the research should be decentralized, in order to assure access to the wider non-governmental scientific community, to allow for intellectual competition among research centers, and to minimize direct political influence on research that might distort research results or conclusions. That means the problem, then, is to design a structure that is sensitive to the kinds of needs for knowledge that policy-makers have, and that will respond to policy-makers' requests, without isolating it from either the national or the international scientific community.

As we indicated above, the potential catastrophic effects that might arise from mismanagement of global systems are generally long-term, and thus unless they become politicized the problems are unlikely to get attention from bureaucrats seized with urgent immediate problems. Planning staffs within bureaucracies tend to respond to the immediate priorities of top officials or become irrelevant. It is unlikely that the State Department's Policy Planning Staff, for example, could organize the necessary creation and collection of knowledge.

The core of our solution to this problem lies in an extensive extra-governmental institutional system organized around a "Global Systems Critical

[3]Ann L. Hollick, "Ocean Pollution: Organization for Environmental and Resource Interdependence," Appendix B, fifth paper, of this volume.

[4]Raymond F. Hopkins, "Global Food Management: U.S. Policy-Making in an Interdependent World," Appendix B, sixth paper, of this volume.

[5]Hopkins, *op. cit.*

List of Problems and Opportunities." This "Global Systems Critical List" would be an inventory of potential long-term catastrophic effects potentially arising from unmanaged or mismanaged development of global systems, combined with an assessment of major opportunities that advances in science and technology have created for constructive governmental action.

To protect against politically biased construction of the Critical List, responsibility for its development and updating would be delegated by an Act of Congress to the National Academy of Sciences. (The work could be financed by a contract from the Office of Technology Assessment in the Congress.) Since a large "catch-all" list would be likely to include a heterogeneous collection of issues on which various groups of scientists sought to work, the List would be organized in terms of global systems; and the problems and opportunities would have to be ranked in importance, with justifications offered for the judgments. The criteria presented in Table 2 are designed to be illustrative.[6]

It is important to point out that these criteria focus on the *social and economic costs* of adverse developments. This implies that social scientists as well as natural scientists would have to be included on the NAS committees drawing up the list. It is not sufficient for policy-makers to be given projections by natural scientists of adverse effects expected from processes of physical interdependence; the second-order effects of social interdependence (including political and economic effects, as in Table 1) must also be carefully analyzed.

The National Academy would, according to this scheme, set up panels to monitor particular global systems, analyze special problems; and construct or revise the list. These panels should include foreign as well as American scientists, in order to avoid unconscious ethnocentric or nationalistic biases, and to ensure rapid diffusion of policy relevant information in other societies. The National Academy is well placed to build upon the effective transnational networks that exist among scientists. Research on which the Critical List would be based could be carried out in universities, corporations, and semi-private systems analysis institutes (American and international).

TABLE 2.—CRITERIA FOR PRIORITIES ON GLOBAL SYSTEMS CRITICAL LIST

1. Probability and seriousness of social and economic damage which will result if existing trends are permitted to continue.
2. Social and economic costs of reversing the trend in the future if present trends are permitted to continue.
3. Social and economic costs of changing existing policies as a function of time.
4. Net social and economic benefits resulting from possible remedial or protective policies.
5. Severity of redistributional effects resulting from issue or its resolution. (Global equity criteria)
6. Possibility of changing conflictual into cooperative situations. (Mitigation or exacerbation of conflict.)
7. Trade-off between benefits from international division of labor and threats to sovereignty made possible by economic and technological interdependence. (Critical issues include those where trade-off is most acute.)

[6]We are indebted to Harvey Brooks, Dean of Engineering and Applied Physics, Harvard University, for suggesting this list.

Research results would be first evaluated by the system of panels established by the National Academy, and then sent, with the list itself, to the Office of Technology Assessment (OTA). The OTA would solicit written reactions to the report, from governmental agencies as well as competent observers outside the government; after this had been done, relevant committees of the Congress would hold hearings. New perspectives might be opened up at this stage, and further questions asked of the researchers. Finally, Congress would adopt a "sense of the Congress resolution" ratifying the NAS Critical List or an amended version of it. The whole process would be as open and public as possible, in order to increase attention paid to these questions, both within the government and outside it, and to insure against a small group of scientists dominating the forward scanning process with their pet problem.

The Critical List could be revised at regular intervals, say in even-numbered years, and sent to the Office of Technology Assessment in the Congress early in the life of each Congress—for instance, in January of odd-numbered years. This would give Congress time to hold hearings and, if necessary, prepare legislation before elections once again became imminent. In those years that marked the advent of new administrations, furthermore, reacting to the Critical List could provide an effective way for the new administration to reorder governmental priorities or dramatize international science and technology issues to Congress and the public.

Any student of the American government knows, however, that publicity does not ensure effective action. If new policies are to be effectively designed, agreed upon, and implemented, the Critical List must be incorporated into a regularized policy-making process in which Executive agencies are involved. We therefore propose if the List is composed in even years, that in odd-numbered years the President would transmit to the Congress a "President's Report on the Global Systems Critical List," which would systematically indicate: a) the Administration's estimate of how United States interests are affected by developments included on the Critical List; b) what the

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government is doing both in budgetary and other terms about the problems cited; and c) what the Administration proposes to do in the near future about them. The President's Report would be prepared for the President's Advisor for International Scientific Affairs (PAISA), who would be one member of a three-person Science Advisory Council in the White House. As discussed in Section III of this report, PAISA would have wide authority to obtain information and analyses from agencies, in a process similar to the current National Security Study Memorandum-National Security Decision Memorandum process operated by the NSA. Thus the highly public advance warning and scanning process that we propose would be closely integrated with a planning and coordination process with headquarters in the White House. The system that we envisage is summarized in Chart 1 and Table 3.

Two further points need to be made about this process. First, the analysis prepared by the National Academy of problems and opportunities on the Critical List would need to include an analysis of the effectiveness of international organizations and multilateral programs in each area. In many cases, there are overlapping international institutions with very little coordination among them; in others, scattered programs exist run by different agencies. The question must therefore be repeatedly asked in each case whether existing international organizations and joint programs are dealing as adequately as possible (given political and other constraints) with the global systems in question.

Our second point is that one must recognize that the system as sketched out in Figure 1 can only work, even at the national level, if the agencies with responsibility for policy-making in particular areas themselves have the analytical capacity and a sufficiently long-term outlook to use information that is provided. This is not the case at present in a number of issue-areas, as several of the papers that we commissioned show.[7] A neat system for the development and transfer of policy-relevant information will be of little use without a complementary plan to provide the necessary personel, staffs and analytical resources for the information to be used on a policy level.

C. Providing for Politicization and Controversy

As we have already indicated, our approach to the problem of long-term scanning attempts not only to encourage future-oriented scientific research, but to ensure that such analysis gets the right kind of attention, at the right time, from high political leaders. Without such timely politicization, the most trenchant and foresighted studies may be buried in the bureaucracy. Without high-level interest, forecasts that call for changes in established ways of doing governmental business are unlikely to have much impact. For example, government studies in 1964 that correctly called for new patterns of energy research and development did not receive sufficient attention.[8]

[7]See particularly the papers by Ann L. Hollick, Raymond F. Hopkins, and Eugene Skolnikoff Appendix B, fifth, sixth and thirteenth papers, respectively, in this volume.

[8]These studies are described in the paper prepared for this project by Victor Basiuk, Appendix B, ninth paper, of this volume.

CHART 1.—PROPOSED WHITE HOUSE-CENTERED POLICY COORDINATION SYSTEM

President's Advisor for International Scientific Affairs (PAISA)	1. issues Critical List Study Memorandum (CLSM)	Interdepartmental Group (IG), chaired by relevant Assistant Secretary of State, with staff help from PAISA's office	2. meets, discusses issue, and if necessary sends options paper to President		President (in conjunction with top advisors)
3. decides issue, issues Critical List Decision Memorandum (CLDM)	Relevant operating agencies	4. carry out CLDM decisions;	Scientific technical bureaus of State Dept., in conjunction with PAISA		5. monitor implementation (If decisions not faithfully implemented. . . .)
State Dept. bureaus	6. report to Undersecretary of State for Economic and Scientific Affairs and to PAISA	Undersecretary and PAISA	7. attempt to enforce compliance with CLDM	(if unsuccesful)	8. they take issues to President for decision again; implementation cycle resumes.

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TABLE 3.—STAGES OF THE LONG-TERM SCANNING PROCESS (ONE CYCLE EVERY TWO YEARS)

Illustrative Date:	*Stage:*	*Action taken:*
1/76	1.	Office of Technology Assessment contracts with National Academy of Sciences for research on the Critical Issues and Opportunities List.
2/76	2.	National Academy establishes scientific panels, which contract for detailed research, as needed.
8/76	3.	Researchers report to NAS panels.
1/77	4.	NAS sends report to OTA and it is released to the media.
2/77	5.	OTA takes two actions: a) NAS report is forwarded to relevant Congressional committees; b) Relevant Executive agencies and the President's Advisor for International Scientific Affairs are invited to comment.
5/77	6.	Congressional committees hold hearings, with testimony from: a) NAS panels and other scientists; b) President's Advisor for International Scientific Affairs; c) Relevant Executive agencies; d) Interested social groups, domestic and foreign.
8/77	7.	"Sense of Congress Resolution" is enacted embodying the "Critical Issues and Opportunities List."
9/77	8.	President's Advisor for International Scientific Affairs obtains information and analyses from agencies on governmental action relevant to the Critical List.
1/78	9.	President's Advisor for International Scientific Affairs prepares President's Report on the Critical List. President sends to Congress via the Office of Technology Assessment.
3/78	10.	If desired, Congressional Committees hold hearings.
6/78	11.	If desired, legislation is enacted.
	12.	Relevant sections of the Critical List and President's Report would be introduced by the U.S. government as an agenda item for discussion at international organizations concerned with specific global systems.

As Figure 1 indicates, the approach that we suggest contains multiple points of potential politicization for issues. Pluralism is introduced into the planning process (where it has been largely absent) as well as into the political process, by systematically opening up public communications channels for research results. The essential idea of this proposal is to extend the notion of "multiple advocacy," as developed by Alexander George, to planning for policy areas involving a high scientific and technological content, by involving groups outside the Executive Branch as well as those within it. Congressional committees and the media, as well as concerned scientists, could bring issues and perspectives to public attention.

Perhaps as important as this pluralism would be the additional pressures brought to bear on the President—by Congress, the scientific community, and the media, and foreign governments—through this system. No future-oriented research study, carried out effectively and containing important implications for policy, could be safely ignored by the President. Even on short-term political grounds, some cognizance would have to be taken of such a document, in view of the fact that Congress, the scientific community, other governments, international organizations, or the media might start to ask embarrassing questions about what had been done to correct the problems in the year that had passed since issuance of the previous Global Systems Critical List of Problems and Opportunities.

No formal organizational arrangement can guarantee timely realization of emerging problems, much less prompt and appropriate action. What the system we suggest would do, however, is to make long-term planning *politically more important* for the President, and therefore to increase his incentives to take the future into account.

It might be objected that this system would complicate matters, making more work for lots of people in the Executive Branch who could more profitably be employed elsewhere. For those with faith in the wisdom of organizational hierarchies, or the few people at the top of the Executive Branch, that objection may be convincing. But if the theory of checks and balances remains valid, it must, in this age of rapid scientific and technological change, apply to the planning process as well as to the final stage of decision-making. Cumbersome, organizationally overlapping, and redundant procedures—exemplified in the Constitutional duties of Congress, and particularly in the separate institutions of House and Senate—are often extremely valuable where uncertainty is great, interests differ, and full discussion of issues is needed. It might happen occasionally that a Congressman would misuse a research report to cause a sensation without valuable policy impact; but the dangers of this (which is likely in many cases to happen even without an institutionalized information system) seem small in comparison with the benefits of openness. The current absence of a systemic agenda means that random politicization puffs trivial issues like mercury in swordfish into major controversies while more serious questions are neglected. A systematically

constructed agenda such as we suggest can help transform occasionally obstructive random politicization into constructive public multiple advocacy.

III. POLICY COORDINATION

Traditionally, the State Department has been regarded as the agency that should coordinate foreign policy throughout the Government, although observers have repeatedly lamented its failure to do so effectively. In part, the reasons for State's incapacity can be found in its own internal organization and personnel system, which we discuss below, Sections B and D. But the essential problem goes far deeper than this. As Harlan Cleveland observes, "nearly every American institution of any size or significance is already partly international."[9] Foreign policy and domestic policy are becoming more closely linked to one another, particularly on issues of global interdependence. As the entire government becomes more involved in international affairs, it becomes more difficult to define a distinctive role for the State Department. Even more important, as more agencies become more involved in foreign policy, with high-ranking officials taking an interest, it becomes increasingly difficult, and often impossible, for officials at the Assistant Secretary or Deputy Assistant Secretary level in the State Department, or lower, to coordinate, much less to control, other agencies' actions.

For these reasons we believe that coordination of policies for global environmental and resource issues can best be centered in the White House and run by a small Presidential Advisory staff. If the White House staff is to remain small, however, and not replicate the size and cumbersomeness of the State Department itself, it must be supported effectively by the State Department and work closely with it. The suggestions below propose a system under which the White House and State Department would collaborate closely to develop policy and to coordinate the activities of operating agencies. The operating agencies themselves would continue to play an increasingly important role, since there would be no attempt to centralize "foreign policy" functions (impossible due to linkages between domestic and foreign policy) but rather a strenuous effort to coordinate policies carried out by diverse agencies. Strong analytical capabilities in the State Department would be necessary elements of such coordination.

[9]Harlan Cleveland, "The Management of Multilateralism," February 3, 1975, p. 8, in Appendix C, first paper, of this volume.

A. A Critical List Study Memorandum (CLSM) System

As we indicated in Section II of this paper, the best scanning and early warning system would be futile without a well-defined process to make the bureaucracy react. We provided for such reaction by specifying that the President's Advisor for International Scientific Affairs (PAISA) would be required to prepare a biennial President's Report to Congress on government actions relevant to the Critical List, and that in preparing such a report he would be authorized to obtain the necessary information and analyses from Executive agencies involved. This process by which his report to Congress will be compiled *would also serve as a focal point for policy planning and coodination within the Executive Branch.*

The procedure for accomplishing this could be patterned on the National Security Council system used by President Nixon and National Security Advisor Henry Kissinger during their first few months in office. For issues on the Critical List, however, the President's Advisor on International Scientific Affairs (PAISA), rather than the President's Special Assistant for National Security Affairs, will be the key figure. PAISA will have the authority to issue Critical List Study Memorandums (CLSMs) at any point, on his own initiative or at the urging of the State Department, other relevant agencies, or Congress. Many of these will presumably be issued in conjunction with the process of preparing his report for the Congress on the Critical List, and all will refer to problems on the most recent Critical List.

PAISA would issue a CLSM, directing an interagency committee (whether standing, as in the IG system, or *ad hoc*) to examine a specific issue, providing "options" rather than "recommendations." Agency heads would respond and discussions would ensue, involving PAISA and, if necessary, the President and his National Security Advisor. Decisions would be issued in the form of Critical List Decision Memorandums (CLDMs), which would serve to inform departments about objectives and decisions, thus promoting greater coherence in American policies on these issues.[10] In conjunction with the Undersecretary of State for Economic and Scientific Affairs (see proposal below) and relevant units of the Department of State, he or she would monitor the implementation of CLDMs and intervene if necessary to ensure that the decisions, once taken, were carried out effectively. The President's Advisor on International Scientific Affairs would thus be in an analogous position on issues involving

[10]This paragraph deliberately parallels the discussion of the NSSM-NSDM system by Graham Allison in his Report for the Commission, Appendix K, Part I.

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the Critical List to the position of the Special Assistant for National Security Affairs currently on politico-military issues.

It is important to note, in evaluating this proposal, the position in the White House structure that PAISA would occupy. PAISA would have a dual base as a senior member of the NSC staff (with the right of direct access to the President) and as a member of a newly constituted Council of Scientific Advisors in the White House.[11] This dual base is designed to link scientific advice to the policy-making process on political and military issues. Many apparently narrow "security" decisions such as atmospheric nuclear tests, weather modification or the use of defoliants, have strong effects on global systems. It is important to alleviate the danger that scientific and technological issues could be shunted into a minor corner of the policy-making process, leading to a loss of status and effectiveness on the part of the occupant of the PAISA office.

It is also important to note what we are *not* proposing. We are not suggesting the establishment of a "super-agency" or some other magical solution that will cut the Gordian knot of policy complexity. The United States Government, like other institutions in the modern world, has to adapt itself to complexity. The inter-agency committee, however hated by proponents of simple hierarchical organizations, is here to stay. The problem is not to abolish the form, since representation of a variety of interests is necessary, but to provide the inter-agency committees with central guidance and coordination that takes into account overall United States foreign policy interests. A systematic process must be devised that will ensure that the Department of State and the White House are made aware, in timely and regular fashion, of what the technical agencies are doing and not doing, and that they are provided with the means to influence those actions.

The CLSM-CLDM system would make it necessary for the White House, the Department of State, and the operating agencies to consider broad foreign policy consequences of their actions, and would tend to legitimize the participation of actors concerned with foreign policy, and the future, in the planning and coordination process. It would do so more systematically than the present NSSM-NSDM system, which only occasionally focuses on global environmental and resource issues (approximately 10 percent of NSSM's in the last six years have focused on these issues), and which by no means surveys these problems systematically. The CLSM system would have the bureaucratic "clout" that no system centered outside the White House could have, without the military-political emphasis often found in the NSSM-NSDM arrangements.

The coordination system that we envisage is illustrated in Chart 1, above.

B. Structural Reforms in the State Department

As the chief foreign policy agency of the government, the State Department is bound to be involved in the management of global environmental and resource issues. Currently, the Department's dominant organizational principle is geographical. The system is country-centered. The Department does have four major substantively organized bureaus structured along functional lines: Educational and Cultural Affairs; Economic and Business Affairs; Politico-Military Affairs; and Oceans and International Environment and Scientific Affairs. The Bureau of International Organization Affairs is also relevant to this paper. (For a full organization chart, see Chart 2.)

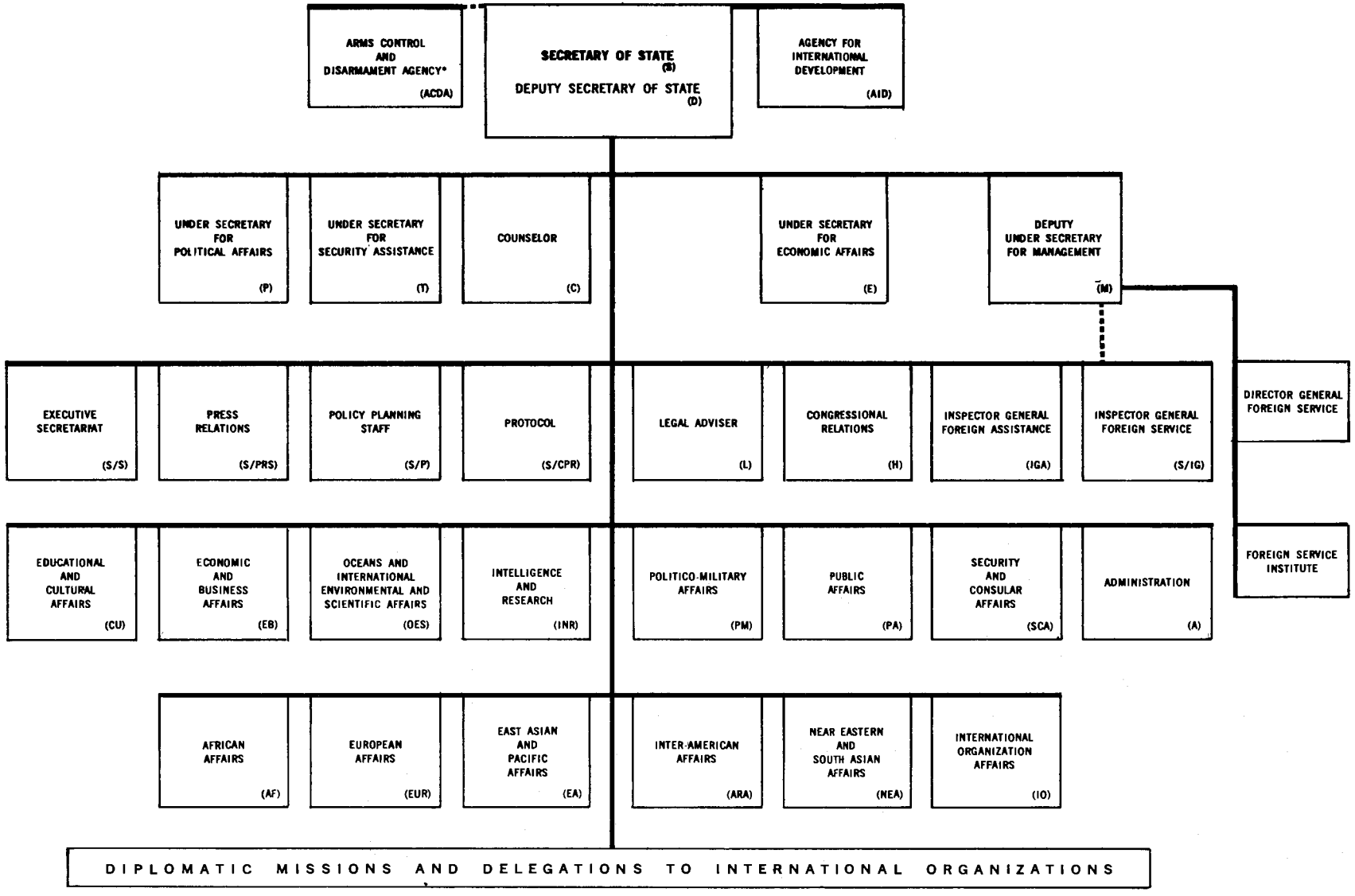
At present, the geographically organized bureaus command the main operational lines and principal communications networks of the Department; furthermore, work in those bureaus is widely seen in the Department as having higher status than employment in the functionally oriented bureaus.[12] The low status of the functional bureaus hampers their ability to recruit first-rate personnel and to assure that their recommendations are taken seriously by other units of the State Department, much less by agencies elsewhere in the government. Thus the quality of their decisions is adversely affected. Probably more important, if less obvious, is the fact that the Department's organization stresses reporting channels that tend to define problems in a country context. Problems that are not critical in any one country, but that combine to form severe global issues, are likely to be ignored, or at least unduly de-emphasized. Certain problems are therefore not identified, or not identified in time. And even if the problems are identified, functionally-oriented bureaus may have difficulty obtaining sufficient attention from high-level policy-makers to ensure that effective action is taken. The reorganization of last October, instituting a Bureau of Oceans and International Environmental and Scientific Affairs (OES), under an Assistant Secretary, represented a step in the right direction, but only a minimal one. (See Chart 3.) We believe that more should be done.

The key problem is that global systems such as those discussed in this paper are increasingly im-

[11]For the various ways in which such a Council might be set up, see the "Killian Report" (National Academy of Sciences, *Science and Technology in Presidential Policy Making*, Washington, 1974); and criticism of it in Harvey Brooks and Eugene Skolnikoff, "Science Advice in the White House? Continuation of a Debate," *Science*, 187 (10 January 1975).

[12]Described in background paper prepared for this project by Victor Basiuk, *op. cit.*

CHART 2.—DEPARTMENT OF STATE



* A separate agency with the director reporting directly to the Secretary and serving as principal adviser to the Secretary and the President on Arms Control and Disarmament.

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portant for foreign policy, but the State Department is not well-equipped to deal with them. Papers written for this project pointed out many instances of this: Basiuk argues that the State Department did not thoroughly oversee AEC negotiations on international energy R & D policy in 1974; Skolnikoff cites NASA programs and R & D programs generally as areas in which the State Department has exercised insufficient influence; Chayes describes the inability of State to control the Intelstat negotiations; Hopkins points to the inadequacy of State Department analytical capabilities on food problems and difficulties encountered with the regional bureaus.[13]

The low level at which the State Department handles many of these issues is one problem, as discussed above. Another weakness in the current organization derives from the lack of integration between units of the Department dealing with global systems issues and those focusing on economic questions. Yet as Schelling points out in his paper for this project, many of the most salient issues arising from environmental concerns are largely questions of property rights. Who has license to pollute or to exploit, and who is to pay or to suffer if practices are changed? Similarly, MacDonald stresses the trade effects in environmental questions.[14] Increasingly, satellite technology and rules for the oceans are likely to have economic consequences.

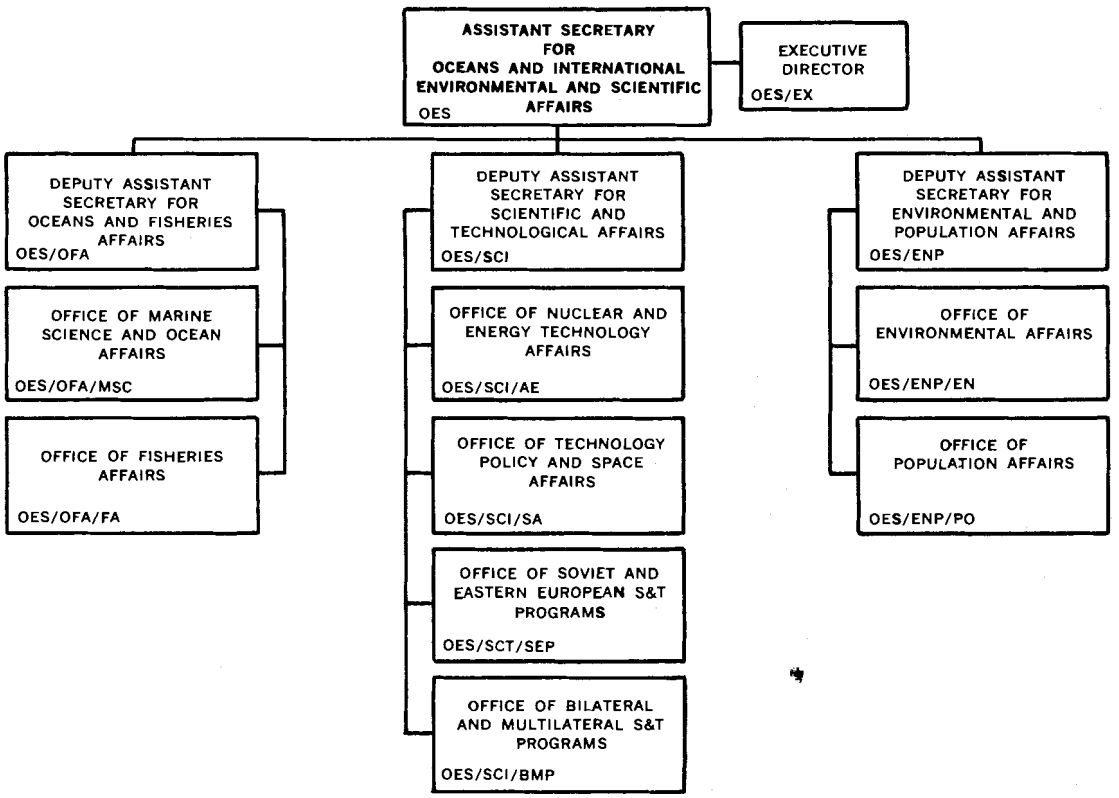
Two problems, therefore, are very obvious in the present organizational system of the State Department: functional bureaus have low status; and they are not connected closely enough with the Economic Bureau—except for food, which is thereby separated bureaucratically from population policy. These problems could be met by a reorganization of the Department of State that made an Undersecretary for Economic and Scientific Affairs directly responsible for five closely related bureaus, each under an Assistant Secretary. This could give the Undersecretary, who would be one of the three top figures in the Department, line responsibility facilitating communication upward from the bureaus and vice-versa.[15] Furthermore, the Undersecretary, as outlined in the previous section, would work closely with the President's Advisor for International Scientific Affairs in the CLSM-CLDM system, thus lending strength to the bureaus

[13]All papers found in Appendix B of this volume, respectively, ninth, thirteenth, fourth and sixth papers.

[14]Gordon J. MacDonald, "Intentional and Unintentional Modification of the Atmosphere," Appendix B, seventh paper, of this volume.

[15]Papers prepared for the Commission by Harlan Cleveland and Richard N. Gardner in Appendix C, first and second papers, reach similar conclusions independently.

CHART 3.—BUREAU OF OCEANS AND INTERNATIONAL ENVIRONMENTAL AND SCIENTIFIC AFFAIRS



while providing expertise for the top officials.

As the top officer of the Government directly responsible for international economic and scientific affairs, the new Undersecretary of Economic and Scientific Affairs would have greater status in the government, as well as closer links with the experts and officials working in these areas. He could lend his weight to the functionally defined agencies when they sought to intervene in the policy process or to contest the arguments of geographically-oriented bureaus. The most appropriate unit of analysis for many issues in an increasingly interdependent world is the issue-system, not the country. In many cases, particularly on issues with scientific and technical implications or on issues related to the international economic system, what is needed is not a set of rational, but encapsulated, country plans but a rational issue-system plan. The Undersecretary for Economic and Scientific Affairs, in conjunction with PAISA and the functional bureaus, would have the responsibility for formulating such plans and for arguing for their importance at the highest levels of the Government.

The Undersecretary for Economic and Scientific Affairs would supervise five closely related bureaus, each under an Assistant Secretary, with the following responsibilities:

1) International economic and business affairs —principally trade, monetary, and investment policy;
2) International energy affairs;
3) Transportation and Communication (includes satellites);
4) Food and population affairs;
5) Oceans and environmental affairs.

The first and fifth of these bureaus would be essentially the present Economic and Business Affairs Bureau (EB) and OES, respectively, although food issues would have been removed from the former and population questions taken away from the latter to form a new and upgraded Bureau of Food and Population Affairs. Energy problems, although beyond the strictly defined limits of this study, seem important enough to merit a bureau of their own. It would be crucial, for obvious reasons, for such an agency to be located within this economic-scientific-technological complex.

It would be idle to suggest that a reorganization along these lines would not entail significant costs. In addition to start-up costs, there would be problems of coordination between the geographical and the functional bureaus. Some geographically-specific expertise would have to be developed within the functional bureaus, as well as vice versa; and close liaison would have to be established between them. The White House-centered CLSM-CLDM system, as described in Section III A above, would facilitate the development of working relationships, since functional and geographical bureaus would have to cooperate in developing options papers, discussing issues in interdepartmental groups, and monitoring implementation of decisions.

Such a reorganization raises the question of the status of the Bureau of International Organization Affairs (IO). As Skolnikoff points out, it is currently "near or at the bottom of the political totem pole within the Department." It is characterized by "inadequate staffing, little influence, largely mechanical responsibilities, and thus a small policy role."[16] Clearly something should be done to improve the situation.

One possibility is that a new quasi-independent agency along the lines of ACDA be established to represent international organization interests. We *do not* believe that this suggestion should be adopted. It is not clear what "international organization interests" are. International organizations differ greatly among themselves. Some are controlled largely by the great powers, others by a Third World coalition; some deal with technical subjects in technical ways, while others are highly politicized. United States interests in problem-solving in the issue area may even, in some cases such as resource satellites, diverge from "international organization interests."

It is of the essence of the complex "global systems" issues that we are discussing that they cannot easily be separated into components, to be run by independent operation. The technical agencies will necessarily have to be involved in the organizations; often, indeed, they should take the lead (monitored regularly, at least, by the Department of State). They have their own international bureaucracies, in many cases, and they should have, since interaction with their counterparts abroad is an important part of their task, and should become more so as time goes on.

The current world situation is characterized by an untidy overlapping of organizations with very poor coordination among them. In a priori terms, a strong case can be made on rational planning grounds for amalgamating organizations in order to relate these functions to each other more intelligently. International organizations, however, are used by states as political instruments for purposes other than those on the agenda. These political roles frequently thwart rational plans. Thus while in principle a large conference on the Law of the Sea (LOS) allows a systemic approach with full atten-

[16]Eugene Skolnikoff, op. cit. The report by Richard Gardner, op. cit., "Foreign Policy-Making in a New Era: The Challenge of Multilateral Diplomacy," confirms the current low status of the IO bureau in the Department.

tion to interaction among subissues; in practice the matrix of 137 states discussing some three-score agenda items has turned LOS-III into an unwieldy negotiation. States have a variety of concerns and adapt their political behavior to the nature of the arena. For example, Brazil has been a leader against American positions at the Stockholm Conference on the environment; at LOS; and at the Bucharest Conference on population. In bilateral dealings on these issues, however, the Brazilians have adopted more conciliatory positions.

The current trend in the U.N. system is toward large conferences characterized by bloc confrontation. In general, large conferences have some value in providing information and general norms but they are not suitable for detailed negotiations about specific regulation or operations. Thus it is important not to approach the role of international organizations in relation to global systems from the perspective of an agency committed to organization for its own sake. International organization is only one of the ways of intervening in global systems as we noted above. There will have to be flexibility in government choices of whether, when, and which organizations to use in coping with global systems.

The close linkage between questions about international organizations and other aspects of "global systems" issues suggests another solution to the problem of the IO Bureau, which we *do* propose. IO should be abolished, and a smaller Bureau for United Nations Affairs, serving principally as a Washington point of reference for U.S. missions in New York and Geneva, should be created. IO's policy-making functions should be allocated to functional bureaus with responsibilities for the relevant issue-areas and to the Undersecretary for Economic and Scientific Affairs. The State Department document announcing the establishment of OES listed eight functions now in IO that could very well be transferred to the relevant functional bureaus. Others surely exist as well.

A change such as this should not be seen as indicating an antipathy to, or downgrading of, the role of international organizations. Quite the contrary. We believe that international organizations are important enough for United States policy on global systems issues—indeed they are *integral to it* —that all of the functional agencies of the Department will have to take them continuously into account. Global systems issues cannot be dealt with properly—and hardly can be considered at all—without considering the actions of international organizations. The United States should therefore encourage its operating agencies to become more internationally-minded, and to develop their contacts with counterpart agencies abroad, by letting them participate effectively in international organizations, *in conjunction with* functionally specific and relatively well-informed sub-units of the Department of State and/or the White House.

An analogy may be appropriate here to the evolution of multinational business enterprises. When these firms first become involved in world business, they develop international divisions; but after a certain point is passed—after which they have become heavily multinationalized—the international division is dropped in favor of an organizational structure that gives the *whole firm* an international orientation. As Louis T. Wells argues: "The continued growth of foreign business appears to lead almost inevitably to the end of the international division," which prepares the way for its own destruction by its very success.[17] We do not carry the argument so far as to propose the abolition of the entire State Department, but we do think it suggests the plausibility of abolishing the Bureau of International Organization Affairs.

A system such as the one we suggest is employed in Britain, which now has one department for the United Nations but separate, functionally-organized bureaus for aviation/telecommunications; marine and transport; science and technology; oil and commodities; export promotion; financial policy and aid; and trade policy.[18]

Any system of State Department organization, including one in which the IO bureau has been abolished, will need to provide procedures ensuring consistency among United States policies, in various international organizations and to focus attention on the role of organizations in the overall pattern of world order. IO is not well-situated to perform this function, due to its low status and lack of bureaucratic "clout." Since most of the economic, scientific, and technical issues for which he is responsible will necessarily involve *multilateral* organizations and relations, we suggest that this policy function be allocated to the new Undersecretary for Economic and Scientific Affairs. In conjunction with a division of Policy Planning (S/P) responsible principally to him, the Undersecretary would establish an overview of the role of organizations; would be concerned with the consistency of our policy and practice in different international organizations; and would work accordingly with the agencies involved. He would also attempt to consider how issues, and U.S. policies on them, related to one another, to avoid excessive fragmentation of policy. This latter function would be carried out largely through the CLSM-CLDM system in which the Undersecretary would be involved.

[17]Louis T. Wells, Jr., "The Multinational Business Enterprise: What Kind of International Organization?" in Robert O. Keohane and Joseph S. Nye, Jr., *Transnational Relations and World Politics* Harvard University Press, 1972, p. 102.

[18]Robert Boardman and A.J.R. Groom, eds., *The Management of Britain's External Relations* (Macmillan, 1973), pp. 48–49.

Such a reorganization would make it organizationally feasible for the United States to develop creative, coordinated initiatives toward international organizations, particularly with respect to relations with the less-developed world, if the administration in power so desired. The IO Bureau now is poorly equipped, due to its orientation as well as to its low status, to carry out such a function. With a system centered on the Undersecretary, aided by S/P, the United States could either pursue a policy of allowing individual agencies to deal, in relative isolation from one another, with various international organizations, or a policy of constructing a new general strategy toward such bodies and the North-South split that has become so pervasive in them.

The outcome of these reorganizations at the Department of State would be a streamlined system, much more responsive to functionally-based issues and better able to coordinate strategies toward international organizations. Yet the activities of the regional bureaus of the Department would not be impaired. Indeed, the regional bureaus should benefit from the early warnings and expert advice that functionally-oriented agencies could provide. Policy toward international organizations would be built into the relevant functionally-defined bureaus, and overall institution-building would be a concern of the Undersecretary and his staff, thus contributing to better integration between the substance of policy and its presentation in international fora.

C. U.S. Government Organization and Transgovernmental Relations

Our discussion of international organizations and of the IO Bureau in the State Department was based on a general perspective on organizing for complex interdependence that we want to make explicit at this time. It seems clear that on these global systems issues, high-level political maneuvering and summit conferences—even fancy footwork or speechmaking by the President and the Secretary of State—are not the key elements of a successful foreign policy. The complexity both of the issues themselves and how they relate to each other implies that bureaucracies must develop policy at the national level and that international coordination must often be accomplished by some set of international organizations. Furthermore, it suggests that although coordination is desirable both internationally and nationally, at the operational level the technical agencies must be closely involved in the process. Thus the miniature foreign offices which many United States technical agencies have developed for dealing with the international ramifications of the issues with which they are concerned are not mere bureaucratic nuisances, but have a positive role to play in managing complex interdependence.

The implication of this is that "transgovernmental relations" will be significant in relations among major governments and that they will continue to increase. We define transgovernmental relations as direct interactions among sub-units of different governments that are not controlled or closely guided by the policies of the cabinets or chief executives of those governments.[19]

From the viewpoint of organizing the United States Government on global systems issues, it is important to distinguish two types of transgovernmental behavior.

Transgovernmental *policy coordination* is activity designed to facilitate smooth implementation or adjustment of policy, in the absence of detailed higher policy directives. Transgovernmental policy coordination is essential to effective management of complex interdependence. It may have very beneficial results when it means that officials from technical agencies of different governments work together to solve joint problems, or when interactions facilitate the exchange of information in such a way that learning takes place. In occasional instances, a sense of collegiality may result that leads to very effective problem-solving behavior. MacDonald cites this pattern in his paper on atmospheric pollution.[20] It also characterizes oceanographic issues. Sophisticated attitudes toward international cooperation, and increased sensitivity to the international aspects of problems, may thereby become increasingly diffused throughout the government. Since international organizations often provide arenas for policy coordination to take place, officials of operating agencies may develop close and mutually beneficial relationships with those organizations, and their secretariats, as well. The role of central foreign policy organs such as the State Department should be to encourage constructive trans-governmental contacts of this type, and to orient operating agencies involved toward broader views of world order, rather than toward their narrowly defined problems. There should be no attempt to cut off such contacts—which would be futile even if attempted. On the contrary, one of the roles of technical assistance programs administered by AID should be to encourage the strength-

[19]For an extended discussion of transgovernmental relations, see Robert O. Keohane and Joseph S. Nye, Jr., "Transgovernmental Relations and International Organizations," *World Politics* 27-1 (October, 1974) pp. 39–62. For illustration of their role in Canadian-American relations, see J. Nye, "Transnational Relations and Interstate Conflicts," *International Organization* (Autumn, 1974).

[20]MacDonald, op. cit.

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ening of "counterpart" agencies concerned with global systems issues in foreign governments.

Transgovernmental coordination can shade into coalition-building. Transgovernmental *coalition-building* refers to the construction of coalitions between like-minded agencies in various governments, for policy purposes, against elements of their own administrative structures. Transgovernmental *coalitions* bear close watch, since they contain the possibility of making United States Governmental policies incoherent. If separate agencies not only coordinate policies directly with their counterparts, but adopt their own independent foreign policies through informal alignments with foreign counterparts, the prospect of achieving a relatively rational synthesis for American policy as a whole disappears. Close monitoring by the State Department and relevant White House agencies is very important to prevent this, or at least keep a check on it; but those policies must be subtle enough to avoid repressing legitimate transgovernmental behavior—or driving the whole process "underground."

Whether transgovernmental contacts have a beneficial or pathological effect in foreign policy depends on the framework within which they occur. "Bureaucratic laissez-faire" is an inadequate framework. Three devices can be used to create a proper framework. (1) The Critical List procedure discussed above helps to stress areas of joint gain cooperation in "games against nature" where transgovernmental coordination is likely to be beneficial. (2) The CLSM-CLDM coordination system we recommended provides a flexible, non-bureaucratic means of monitoring such contacts and introducing occasional high level attention from the President, Secretary or Undersecretary to reinforce the concerns of over-all foreign policy. (3) In addition, a process of exchanging personnel between the State Department functional bureaus and the "limited foreign offices" of the domestic agencies could help to improve communication and limit the parochialism of agency perspectives.

D. Personnel and Staffing

Papers written for this project have repeatedly suggested that a major impediment to effective policies on global systems issues lies in the inadequate staffs that now attempt to cope with these problems. The Foreign Service Officers and Foreign Service Reserve Officers in the State Department often do not have sufficient analytical capabilities and technical training to formulate policy coherently or to monitor and coordinate the behavior of operating agencies. For their part, personnel in the technical agencies are frequently insufficiently versed in the subtleties of foreign policy.

This report has stressed that although coordination of policy across agencies is highly desirable, centralized control is impossible. Transgovernmental coordination, carried on by operating agencies with their counterparts abroad, is a permanent and essential aspect of foreign policy. "Collegia" of experts and officials from a variety of countries form around different issues and their associated international organizations, and often work effectively together to solve particular problems. Frequently, delegations to international organizations are composed largely of such people; and it would be desirable for the United States to pay more attention to placing more of them, for longer or shorter periods of time, in international organizations as members of secretariats, to facilitate cooperation between the United States and these organizations. What is required of a personnel system in this regard is that it ensure that officials of technical agencies with international activities be sophisticated about contemporary international politics, well-versed in American foreign policy, responsive to guidance from the Department of State or the White House, and inclined to cooperate closely with central foreign policy agencies.

On the State Department side, the key question is whether any reforms can change what sociologists have described as the "bureaucratic culture" of the Foreign Service, with its emphasis on representational and reportorial functions, and on traditional political questions. Whether this is possible without drastic action is unclear; yet the requirements are evident. State Department personnel, particularly in the functional bureaus, must have the technical skills necessary for understanding technical issues, as well as competence in policy analysis. Otherwise they will be unable to assess the implications for interdependence and United States foreign policy, of alternative policies toward global systems.

It is not difficult to suggest a variety of incremental personnel changes to improve organization for global systems, including more courses on relevant issues at the Foreign Service Institute; more sabbatical years at universities for officers from functional bureaus to retool or upgrade their skills; and more "secondment" of Foreign Service Officers to international units of other Departments or agencies (including Agriculture, Treasury, Commerce, NASA, and ERDA). Such changes, however, would not be effective without a high-level policy commitment. In Britain, although the Duncan Report was never formally implemented, its influence is seen in the pattern of "bright young people" gravitating toward the functional departments. In view of the

attitudes prevalent in our Foreign Service, however, it is not clear whether even consistent high-level involvement on personnel questions could make incremental reforms such as these effective.

This suggests that the personnel requirements for global systems issues are at least consistent with "de-Wristonization" or with proposals such as Gardner's and Cleveland's for a functional career service that would provide a core of analytically-trained, policy-sensitive officers both for the State Department and for a variety of "domestic" agencies with important international activities.[21] Personal networks that cross functional lines play an important role in coordination. This may, indeed, be the only way to meet the requirements that policy-makers on global systems issues combine technical and foreign policy competence, and that they be sensitive to the problems and perspectives of other agencies.

IV. SUMMARY OF RECOMMENDATIONS

In the long run, the global systems issues discussed in this report are very important for United States foreign policy. Catastrophes could occur if they are not dealt with properly. Major opportunities may be foregone. Nevertheless, since the subjects are often highly technical, they may appear arcane to top policy-makers and not receive the timely attention that they deserve. Thus systematic arrangements for scanning and early warning, which publicize issues as well as promoting focused scientific inquiry, are necessary.

These global systems issues cut across conventional bureaucratic lines. Domestic and foreign policy aspects of problems become intertwined. Diplomacy on these issues is increasingly multilateral. Because of these characteristics, policy coordination is particularly difficult. Yet the United States Government is poorly organized for coherent policy-making on these questions.

Our proposals have been developed in response to the disjunction that we perceive between organizational requirements and current organizational arrangements. Due to their complexity, it seems useful to summarize our major proposals here. Our two most important recommendations focus on the policy-making process; these are accompanied by complementary recommendations proposing changes in structure.

A. Changes in the Process

1) A long-term scanning and insurance system would be developed, based on a biennially updated Global Systems Critical List of Problems and Opportunities. This list would be developed by the National Academy of Sciences under contract from the Office of Technology Assessment in the Congress, in conjunction with a variety of research centers and foreign as well as American scientists. Priorities on the Critical List would be established through the use of well-defined criteria, and the List, as well as the rationale behind it, would be extensively discussed in Congressional hearings and in the media. Executive agencies would be required not only to testify on the adequacy and accuracy of the Critical List, but to indicate biennially in the form of a President's Report to Congress what was being done to cope with the problems, and seize the opportunities, that the list indicated. In conjunction with these reports to the Congress, the Critical List would be used as the basis for a White House-centered policy planning and coordination system. (For this system see Section II of this report.)

2) A policy coordination system would be developed, built around a system analogous to the current NSC NSSM-NSDM arrangements. Critical List Study Memoranda (CLSMs) and Critical List Decision Memoranda (CLDMs) would be formulated through a process centered in the White House, but in which the State Department would play an active and important role. This system would help to give central foreign policy agencies the means to effectively monitor activities of the operating agencies. (This system is described in Part III A of this report.)

B. Changes in Structures

1) The position of President's Advisor on International Scientific Affairs (PAISA) would be created in the White House. This Advisor would be a member of a Council of Scientific Advisors (CSA) as well as a senior member of the National Security Council staff with independent access to the President. Thus he or she would be assured access both to the science policy apparatus of the government and the foreign policy machinery. Close ties would need to be maintained, at least for some issues, between this official and the Council of Economic Advisors. (For a discussion of PAISA and his or her functions, see sections II B and III A.)

2) The State Department would be reorganized, creating a new and high-level position of Undersecretary for Economic and Scientific Affairs, with line responsibility for five functionally defined bureaus dealing with economic and scientific affairs. The Undersecretary would work closely with the President's Advisor on International Scien-

[21] Clevand and Gardner, op. cit.

tific Affairs in the CLSM-CLDM system; indeed, they should be chosen to work as a team, or at least as bureaucratic allies in the continuing struggle to introduce coherence into foreign policy. The bureaus would be expected to contribute their expertise, while the Undersecretary and President's Advisor lent the political influence deriving from their positions and their personal as well as official stature. (See section III B.)

3) As part of the State Department reorganization, the Bureau of International Organization Affairs (10) would be abolished. Its representational functions in New York and Geneva would be delegated to a smaller Bureau of U.N. Affairs; many of its specific policy functions would be dispersed to relevant functionally-defined bureaus; and its world order overview and policy coordination functions (which it does not perform well) would be centered in the Office of the Undersecretary for Economic and Scientific Affairs, with assistance from a specific component of the Policy Planning Staff. (See Section III B.)

4) Either through the effect of structural change on career incentives or through establishment of a new service, foreign policy agencies with responsibilities for global systems issues would be staffed more adequately with competent technical people and expected to do better analysis. It should be kept in mind, however, that it is equally important to ensure that officials in "domestic" agencies are sensitive to international political problems and to linkages among the issues that they normally deal with individually. (For the relevant discussion, see Section III D.)

C. General Conclusion

It is not possible for us systematically to compare our recommendations with those of studies prepared for the Commission on other areas of foreign policy. The Commission and its staff will perform that role. Nevertheless, it is worth noting in conclusion that our recommendations are broadly consistent with those of the Study on Defense and Arms Control and the Study on International Economic Issues. In all three cases, analysis of optimal organizational patterns indicates that the basic management and coordination function must be centered in the White House, but with strong support from the State Department as well as from other concerned agencies.[22] Consistency in organizational arrangements between issue-areas is obviously highly desirable, in the interests of facilitating policy coordination between economic, politico-military, and "global systems" issues.

Although differences emerge on particular recommendations we also find substantial agreement between our views and those of Professors Harlan Cleveland and Richard N. Gardner, in their reports on multilateral dimensions of contemporary diplomacy. Both of these reports emphasize the close links between domestic and foreign policy; the extent to which multilateral diplomacy pervades American foreign relations, especially in non-military areas; the need for an Undersecretary of State who would have authority in these areas, with line responsibility and status to match; and the desirability of Congress playing an active and independent role at crucial stages of the policy process.

Finally, we want to repeat that the details of our recommendations are less important than the underlying premises. We argue the need for long run planning, but without a large planning bureaucracy. We see politics as a potentially healthy aspect of planning. We see the role of scientific experts as important in the planning process, but want their policy advice subject to public scrutiny based on multiple advocacy in the context of a systematically organized agenda. We see Congress as playing an important role in establishing the legitimacy and effectiveness of the planning process.

In regard to international interactions, we regard direct contacts among specialized agencies of governments as useful in the management of interdependence. Thus the coordination framework within the government must not be too heavy-handed. We believe it important to insure adequate foreign inputs to American foreign policy-making, but stress the potential value of building on transnational and transgovernmental networks such as those that exist among scientists and among specialized agencies. We regard international organization as a process. Formal organizations are only one of several instruments for dealing with global systems and the construction of a more peaceful and just world order.

After all is said and done, organization cannot be entirely divorced from content. We have devoted our attention to organizational issues, not so much because we are fascinated with them in themselves, but because sensible structures and procedures are preconditions for effective and far-sighted policy. Our most strongly felt hope is that better organization will facilitate creative initiatives that further the broadly shared and long term interests of Americans and of other peoples during the next decades. Our organizational vine is an untidy plant. It is to be judged not on how it looks, or how efficiently it clings or climbs, but on the quality of the policy fruit that it produces.

[22]Graham Allison and "Principal Lessons of the Past Decade and Thoughts on the Next," by Edward K. Hamilton, Appendix H, Chapter I.

ANNEX A: BACKGROUND PAPERS PREPARED FOR THIS PROJECT

Issue Papers:	
Organizing the U.S. Government Response to Global Population Growth	Elihu Bergman Harvard University
Nuclear Reactors	J.C. Bupp and Jean-Claude Derian Harvard University
Communications Satellites	Abram Chayes Harvard Law School
Ocean Pollution: Organization for Environmental and Resource Interdependence	Ann Hollick Johns Hopkins University, School of Advanced International Studies
Global Food Management: U.S. Policy-making in an Interdependent World	Raymond F. Hopkins Woodrow Wilson International Center for Scholars
Intentional and Unintentional Modification of the Atmosphere	Gordon J. MacDonald Dartmouth College
Space Satellites	Eugene B. Skolnikoff Massachusetts Institute of Technology
Organizational Papers:	
U.S. Government Organization for Science, Technology, and Foreign Policy	Victor Basiuk Commission on the Organization of the Government for the Conduct of Foreign Policy
The Role of Congress	Alton Frye Council on Foreign Relations
Science and Technology: Reorganizing for the Evolution of International Regimes	Ernst Haas and John Ruggie University of California
The Role of Scientists and the National Academy of Sciences	Dixon Long Case Western Reserve University
Environmental Concerns and International Conflict	Thomas Schelling Harvard University
History of U.S. Government Organization	Eugene B. Skolnikoff Massachusetts Institute of Technology

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Organizing the U.S. Government Response to Global Population Growth: A Perspective on Interests, Capabilities and Structures

Elihu Bergman
April 1975

I. THE NATURE OF THE INTERNATIONAL INDEPENDENCE

Excessive rates of population growth in underdeveloped countries aggravate conditions that frustrate the achievement of American foreign policy objectives.[1] Accordingly, rapid population growth represents the terminal of another axis in the complicated web of linkages that involve U.S. interests with conditions prevailing in the most populous and less developed countries in the world. These are the countries that both are unable adequately to feed, house, clothe, educate, and employ the majority of their populations, and to accommodate their increasing concentration in urban centers. At the same time these countries suffer fragile governmental structures, which lack the capacity to provide adequate management for their internal and external affairs.

Excessive population growth in these societies intersects U. S. foreign policy goals in three interrelated areas:

A. Political

Chronic conditions of human deprivation among the majority of a population, accentuated by rapid population growth, contribute to the vulnerability of incumbent regimes with respect to their internal stability and their external commitments. Regimes unable to accommodate the needs and demands of the majority of their people are subject to collapse, and replacement by regimes whose behavior may not conform to a pattern of international relationships consistent with American foreign policy objectives. In addition, reliability of incumbent regimes pressured by rapid population growth is questionable for the maintenance of bilateral political and economic commitments with the United States, and multilateral undertakings with international structures.

B. Economic

The conditions of deprivation in underdeveloped countries, coupled with the inability of the incumbent regimes to ameliorate them, create a continuing requirement for external economic assistance, which at periodic intervals is escalated by

[1]Excessive growth rates are best highlighted in comparisons of characteristics of underdeveloped and developed countries, as follows:

	Underdeveloped	*Developed*
a. Crude birth rate	45 per 1000	15 per 1000
b. Number of years to double population	21	87
c. Annual rate of increase	3.0	0.8

American foreign policy objectives might be broadly defined as the creation of a system of nonviolent and durable international relationships which are nonthreatening to the political and economic well-being of the United States and its allies.

natural catastrophes such as flood and famine. This chronic international welfare burden is subject to response by any countries so inclined, on the most favorable terms and conditions they may obtain.

Since the end of World War II the United States has responded to the welfare burden with major programs of foreign economic assistance on terms designed to further American foreign policy objectives. In this enterprise we increasingly have been confronted with competition by the Soviet Union, which usually sets conditions for its foreign economic assistance inconsistent with American foreign policy objectives. Two increasingly significant competitors in manipulating the international welfare burden, whose role cannot yet be adequately assessed, are the Chinese People's Republic and the major OPEC oil producing nations.

Occasionally the competition has created demands on American economic resources that have increased and distorted reasonable levels of American assistance. And whether under conditions of competition or not, allocations of American resources for foreign economic assistance compete with domestic needs. Thus, whatever the conditions, competitive or not, or the particular spread of competition, foreign economic assistance comprises a significant demand on the American national budget.

C. Humanitarian

Whatever the political or economic considerations involved, conditions of human deprivation elsewhere in the world evoke a compassionate response among sectors of the American public who are aware of the conditions. It could be said that concern about the welfare of others is a fixture in the American political ethos. Though always capable of being evoked in the abstract, the expression of this compassion can be deterred by conditions such as the recognition of competing needs at home, anxieties about involvements abroad, and hostilities engendered by the behavior of needy countries.

Nevertheless, the humanitarian instinct provides a direct link to conditions of deprivation in other countries. This linkage has been effectively exploited by the sectors of American society most informed and concerned about events outside the United States. These are characteristically the higher status groups who enjoy greater access to the foreign policymaking apparatus of the American government.

These political, economic, and humanitarian areas thus provide the environment in which rapid population growth in underdeveloped countries is linked to American foreign policy objectives.

1. Quality of Linkage: With one notable exception, the relevant linkages created by conditions of rapid population growth are social in nature. The exception is Mexico, which is physically contiguous to the United States, and whose unabated population growth can create conditions increasingly disturbing to U. S. foreign policy interests.

Mexico has a population of 56.2 million with a current annual growth rate of 3.3%, whose persistence would double the Mexican population in 21 years.[2] The Mexican fertility rate, the prime cause of the high growth rate, has shown no signs of abatement, and it is still too early to determine the potential of the two-year-old national family planning program for reducing it. Despite significant economic growth over the past two decades, the distribution of income among the poorer 40% of the population has shown no improvement.[3]

Political unrest, though controlled and manipulated by the regime, has lurked beneath the surface since the stabilization of the Mexican revolution in the early 1930's. However, during the past three years it has surfaced more noticeably than during the previous three decades. The more visible expression and higher frequency of political unrest under an administration that is regarded as reformist, raises questions about the continuing capacity of the Mexican regime for the accommodation and manipulation of the unrest, and over the longer term, for the persistence of the regime itself.

Beyond the quality of any future regime change that may transpire in Mexico, and its consequences for the interests of the United States, there is the immediate issue of continuing pressure of excess Mexican population on the United States in the form of immigration, much of it illegal. In a recessionary period such as we now are experiencing, Mexican competition for employment with deprived resident American ethnic minorities, increases the economic and political strains on local and state governments, particularly in the Southwest and California.

Similar problems for the major metropolitan jurisdictions of the Northeast have been created by legal and illegal immigration from the Caribbean area. This movement is the product of economic pressures compounded by rapid population growth in the countries of origin.

2. Nature of the Social Linkage: In the case of the noncontiguous high population growth countries, the linkage, though nonphysical, creates comparable conditions of interdependence. The demands created by the inability of these countries to accommodate the primordial needs of their growing

[2] 1973 World Population Data Sheet, Population Reference Bureau, Inc., Washington, D.C.

[3] William Rich, *Smaller Families Through Social and Economic Progress*, Monograph No. 7, Overseas Development Council, Washington, D.C., January 1973.

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populations, needs which are regularly aggravated by catastrophes of nature, impose financial and political burdens of varying magnitudes on the American system. These burdens become all the more noticeable in periods of American economic recession. The potential for economic and political competition, particularly with the Soviet Union, in responding to this international welfare burden further complicates the conduct of American foreign policy by introducing additional ingredients for conflict.

In times of American prosperity, the American humanitarian impulse, which in any event is an unreliable influence in domestic politics, is likely to achieve more tangible expression because it costs less to express it. However, in conditions of domestic economic difficulties the humanitarian factor becomes more of an abstraction as an effective political force.

3. Geographic Scope of Linkage: Rapid population growth is an auxiliary quality to conditions of underdevelopment. Accordingly, the relevant linkages created among societies by rapid population growth are the same as those created by underdevelopment. These are the linkages that prevail between "have" and "have not" societies, and do so without regard to geographical symmetry.

From the standpoint of the United States, the linkages are distributed on a global basis. Geography is not a critical determinant of the quality of the linkage, nor its significance in the conduct of American foreign policy. The conditions created by rapid population growth in Mexico and the Caribbean may pose problems for the United States that differ in degree than from those created by the same phenomenon on the Indian subcontinent. But the particular quality of American concern, or assignment of priority that results from a specific linkage, depends on the overall configuration of American foreign policy objectives and priorities at the time. Although the geographical proximity of Latin America once endowed it with a preferred position on the American diplomatic agenda, the grounds for this ranking no longer exist. Indeed it could be said that the major American concerns about problems associated with rapid population growth now are focused on the Indian subcontinent.

4. Conditions of American Vulnerability: The persistence of high population growth rates in underdeveloped countries represents an adverse condition for American foreign policy interests. It is unlikely that the growth rates will further "deteriorate" by increasing, because they already reflect the major impact of death control technology. Accordingly, it would be reasonable to assert that the growth rates have peaked at their existing high levels.

Changes adverse to American interests would be reflected in the deteriorating political, social, and economic conditions that are aggravated by persistent pressure of continuing high growth rates, and the quality of American vulnerability would be determined by the particular form of deterioration. In some situations we would be less vulnerable than others.

Consider the economic collapse of a country like Bangladesh to which high population growth rates would contribute. If the consequence of this collapse was the transformation of Bangladesh into a Soviet-client state, American interests would suffer in the short run. For one thing, the availability of East Bengali ports would increase Soviet capacity for maintaining a larger strategic force in the Indian Ocean at a lower cost, and the American response to this condition would be costly in both strategic and financial terms.

In all but a humanitarian sense, the United States would be less vulnerable to a collapse of the Bangladesh economy if such a collapse were not accompanied by a major regime change with significant alterations in bilateral commitments. In such a situation the impact on the United States would be measured by the cost of the resources we might transfer to Bangladesh for economic sustenance. In the current recessionary situation, the financial and political costs of transferring these resources would be higher than in a condition of national prosperity.

But historically our response to sudden privation in underdeveloped countries never has been of such magnitude as to create adverse effects on the American economic and political systems. This is because our political system does not tolerate transfers of wealth that harm the American economy, whatever its condition.

Thus American vulnerability is created by conditions resulting from the collapse of an underdeveloped society, accompanied by major regime changes leading to significant new relationships with major powers. But as a result of such situations, the critical interdependent linkages for the United States are with the major power, not with the underdeveloped country.

5. Symmetrical Nature of Vulnerability: The ultimate outcome of adverse conditions in underdeveloped countries accelerated by rapid population growth is economic and political collapse. The countries most vulnerable to this outcome include major nations of Southeast Asia, among them the world's most populous: Bangladesh—83.4 million; India—600.4 million; Pakistan—68.3 million; Indonesia—132.5 million; Philippines—42.2 million and Thailand—39.9 million. The combined populations of these countries total nearly one billion which is approximately 30% of the world's total population.

Because of their sheer size, the collapse of any one, or a group of these countries, would create a

more or less symmetrical pattern of vulnerability in terms of the interests of modern nations, both communist and noncommunist. The uncertainties associated with political upheaval, particularly in a populous country, are disturbing to existing patterns of international relationships, many of them fragile, which the world's major modern powers determine. To this extent, upheaval induced and created by unbearable economic realities would be shared symmetrically by the significant global powers.

Beyond this symmetrical distribution, there is another level of vulnerability which most likely would not be shared symmetrically. Unmitigated deprivation played a significant role in the major political and social upheaval that took place in another highly populous Asian country—China. It is increasingly reasonable to assume that as the Chinese model becomes more visible to populous underdeveloped countries, it might be viewed as an alternative, particularly in Asian countries where existing regimes are incapable of responding to the needs and demands of their populations. A new series of international linkages that could evolve from the creation of a Chinese model in any one of the populous Asian countries would benefit China more than the United States and the Soviet Union. Thus the U.S. and the Soviets, and the pattern of international relationships they have been busily attempting to construct, would be more vulnerable as a result than would be mainland China. Reciprocally, upheaval in Bangladesh, or say India, resulting in a model more compatible with Soviet design and interests, could create a revised series of international linkages in which the Soviet Union was less vulnerable, and the United States and China more so.

6. The "Zero Sum" Quality: Clearly the linkages in which rapid population growth plays a role do not create winner take-all situations. The ingredients are much too complex, involving varying numbers of players and interests and stakes that are ephemeral. If the experience of a single underdeveloped country could be abstracted from the rest of the world, then it might be possible to reasonably forecast a winner take all outcome. Even then, the relevant contest would not involve the underdeveloped country, rather the major powers with the principal interests.

Because we are dealing with the complex, global and intractable problems of underdevelopment, it is unrealistic to suggest any single pattern of U.S. government organization that in itself would contribute better safeguards for our national interests. What reasonably can be suggested is that we design or fine-tune an organization apparatus so it is better able to perceive the complexities, and most importantly, to identify what we realistically *cannot* do about any given situation.

Our major failure in this area over the past 25 years is *not* one of organization but one of attitude, resulting in misconceived convictions that somehow the U.S. is capable of reversing conditions of underdevelopment in the world. Accordingly we have adopted many of the technocratic approaches that we employ to design and build interstate highways. The organizational arrangements created by these attitudes have been designed primarily to conduct action programs inspired by a high degree of technological optimism.

To the extent we make changes, our favorite organizational model, whatever it turns out to be, should reflect a realistic conception of the task, principally that it will have little impact on conditions of underdevelopment because such changes are not externally induced, but rather must emerge from inside.

II. QUALITY OF AMERICAN INTERESTS

Like foreign aid, the vehicle employed to deal with it, the issue of rapid population growth in underdeveloped countries has not achieved an effective constituency in American politics. The limited constituency supporting American activities in the field has evolved around several motivations:

A. Humanitarian

It is a moral obligation to employ American resources for the relief of human distress elsewhere in the world. The United States should share its wealth and skills to improve the welfare of other peoples. Beyond the moral obligation, improving the lot of deprived peoples and nations will create a climate more conducive to international prosperity and tranquility, conditions that are in the interest of the United States, as well as the world at large.

(The humanitarian approach is expressed by individuals and groups with an international orientation and an active interest in the condition of American foreign policy, usually in conjunction with one of the other rationales.)

B. Economic

Rapid population growth increases the international welfare burden and erodes the value of resources allocated to cope with it. Over the past

generation, American foreign aid has had minimal or no effect in underdeveloped countries experiencing rapid population growth. Transfers of resources to those countries, designed for economic and social investments, are dissipated in immediate consumption requirements created by rapid population growth. A turnaround in population growth will contribute to the elimination of such distortions in the use of foreign aid. Ultimately, if population growth is turned around, the international welfare burden will decrease to the point where American foreign aid can be phased out. And to the extent foreign aid continues, its value will markedly increase in the long term development programs of underdeveloped countries.

(This rationale is frequently employed by officials in the executive and legislative branches, and their public supporters, as the principal justification for aid authorizations and appropriations for population activities.)

C. Professional and Scientific Interest

The complexities of rapid population growth and the development and deployment of remedial formulas and instruments require extensive research, study, and training. Teaching and research institutions have a major contribution to make in exploring the area and devising means for solving the problems it has created. Without a systematic, scientific approach to the problems of rapid population growth, effective solutions cannot be devised. Principal responsibility for this systematic effort resides in the scientific and intellectual community of America.

(This position is expressed by members of the American intellectual and scientific community who have developed interests, scientific skills, and understanding in problems associated with population change. These specialists and scientists are located in relevant university departments and research centers, in the federal government, principally the National Institutes of Health, and in the foundations such as Ford, Rockefeller, and the Population Council.)

D. Ideological

Rapid population growth occurs in nonwhite societies, and its continuation represents a threat to values inherent in western civilization as we know it today. Nonwhite populations are less desirable because they are less capable and less productive, and thus chronically contribute to the welfare burden, both nationally and internationally.

(This view, for obvious reasons, is never publicly expressed, and thus is difficult to capture empirically. However the position has acquired enough informal attribution to warrant its mention. The anxieties underlying the position are expressed among the American public with reference to specific domestic issues such as education, welfare, and personal and community security. Thus their projection to nondomestic issues is not a surprising phenomenon. Though not attributed to any organized group, this rationale is said to motivate some key members of the Congress responsible for foreign aid authorizations and appropriations, and some of the private citizens who have been associated with activities to curb rapid population growth.)

This mixture of perceptions, motivations, and anxieties, has created the semblance of an interest group coalition in the population field. In another publication I have described this coalition in some detail.[4] For present purposes I will quickly summarize these findings: The "American Population Coalition" is not a broadly based phenomenon, and like other coalitions evolving around foreign policy issues, its constituent elements for the most part are not motivated by the prospects of tangible rewards. But it is a grouping of individuals and institutions, widely differentiated in motivations, values, and political preferences. Because the population issue has been perceived as both a domestic and international problem, in its expressions and activities, the coalition combines domestic with international concerns. In policymaking for both, the linkage of domestic and international concerns has been mutually reinforcing. Thus a major fertility control initiative in the foreign aid program predated (1967) the major federal domestic family planning legislation (1970) because it was felt the political system would not tolerate federal intervention in so sensitive an area so close to home. But the foreign aid program created a political momentum that facilitated legitimization and enactment of the domestic program. And the same coalition of interest groups was involved on behalf of both programs.

The interest group coalition embraces the following major entities:

A. UNIVERSITIES

American university population studies programs function through population centers,

[4]Peter Bachrach and Elihu Bergman, *Power and Choice: The Formulation of American Population Policy*, Lexington: D.C. Heath & Co., 1973, Chapters 4 and 5.

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schools of public health and medicine, and academic departments of sociology, economics, and demography. Together they constitute the scientific core of the population coalition. Measured by volume of resources and activities, the principal university participants are: North Carolina, Michigan, Johns Hopkins, Harvard, Rockefeller, Pennsylvania, Chicago, California, Berkeley, and Columbia. There are distinguished teaching and research activities at other universities, but not on the same scale.

B. FOUNDATIONS

Prior to the entry of the U.S. government as a major supplier of resources in the population field, two American foundations and one quasi-foundation were the principal contributors of resources, and major suppliers of scientific and intellectual leadership. These are the Ford and Rockefeller Foundations and the Population Council. Though at a reduced level of expenditure, they still maintain their interests in the field.

C. PRIVATE ASSOCIATIONS

Two associations have contributed significantly to creating an American population constituency. The Population Crisis Committee was created by Hugh Moore, an American industrialist, and thrived under the effective leadership of the late General William Draper, who by general consensus succeeded in moving the U.S. government to "think big" about foreign assistance to reduce population growth. The Committee is composed largely of prominent individuals in American corporate life, the professions, public affairs, and the universities, and focuses largely on the international scene.

The major organization with a domestic focus is the Planned Parenthood Federation of America, whose historic concern has been the provision of the family planning opportunity to all American females who require it. Planned Parenthood is based on a national network of chapters with a distinctive upper-middle-class coloration. A major offshoot of the Planned Parenthood movement, is the Center for Family Planning Program Development (recently renamed the Alan Guttmacher Institute), which has provided impressive programmatic and analytic service in the domestic family-planning field, plus a skilled lobbying operation in Washington. Though Planned Parenthood's orientation is domestic, its membership is sensitive to the international dimensions of the population issues.

D. GOVERNMENT

In the executive branch there are two major instrumentalities with a population mission. The Office of Population in AID's Bureau for Population and Humanitarian Assistance is responsible for conducting foreign aid activities in the population field. The Center for Population Research in the National Institute of Child Health and Human Development manages the federal government's investment in biomedical and behavioral research enterprises on population problems. The Center's program involves international as well as domestic subject matter. Until recently there was a Special Assistant to the Secretary of State for Population Matters, who functioned principally as an international and external spokesman on American interests in population limitation.

In the legislative branch several committees are involved in authorizing U.S. foreign aid activities in the population field, and appropriating the related funds. These are, respectively, the Senate Foreign Relations Committee; the Foreign Aid Subcommittee of the Senate Committee on Appropriations; the House International Relations Committee; and the Foreign Operations Subcommittee of the House Committee on Appropriations. Because of the extensive agendas and variety of subject matter that the members and staffs of these committees deal with, their treatment of population issues—both in depth and in amount of time expended—depends largely on the interests and inclinations of individuals involved.

For the most part, configuration of institutions characterized as the American Population Coalition is the relevant constituency in whatever population interests the United States might have, domestic and foreign. Unlike constituencies that evolve in other issue areas which are based largely on groups of citizens interested in a particular gain, this coalition is more of a collegial body composed of a variety of institutions and individuals linked for a variety of reasons by common concerns in an issue area that confers no tangible rewards, and thus whose interest and action is motivated by other incentives. Beyond its common upper status profile (some would call it elitist) the coalition/constituency is highly differentiated in terms of its particular interests, political proclivities, motivations, and institutional affiliations. Nevertheless, the aggregation of individuals and institutions has managed to coalesce around a common concern for the harmful impact of rapid population growth on whatever favored version of society each envisions.

Though there is a consensus among the diverse population constituency on a certain level of generalization, the motivations for this consensus are

sufficiently differentiated so that it could not be characterized as a moral consensus. It is more an opportunistic alignment of interests that converge on a single formula acceptable to all—the reduction of rapid population growth. While it is possible that some elements in the constituency would find much in common beyond the concern about population growth, other elements doubtlessly part company on other policy issues. Those motivated by an anxiety about the explosion of nonwhite populations, for example, are not likely to support initiatives that would increase the political power of these populations at home or abroad. Similarly, some of those who see population control as an instrument to reduce the international welfare burden probably would not approve of major American investments to increase agricultural productivity in poor countries for achieving the same objective.

Beyond the mixed consensual quality of the population constituency there is a mixed perception by each of the coalition partners of how adverse changes in population conditions affect them. For those motivated principally by humanitarian instincts, adverse changes creating starvation are likely to have a painful impact. But the impact does not originate in any tangible distribution of benefits or deprivations among the Americans affected. Accordingly, the issue has a remote quality about it, and is dealt with in models and other sorts of abstractions, a format which does not tend to arouse the interests, much less stir the passions, of large numbers of Americans. Thus the absence of any tangible stakes limits the scope of political interest, and the population issue in American foreign aid policy is left to the disposition of a limited constituency. This reality determines the type of political engagement that yields the related public policy decisions.

Under the circumstances, it is unrealistic to consider improved policymaking in this area in terms of increased mass participation in the process. While greater participation of a concerned citizenry is desirable, the configuration of the interest groups involved and the motivations for and condition of their interests suggests the continuation of a circumscribed policymaking arena.

Within this arena, the more effective expression of the various interests involved and their translation into better policy is likely to result from the availability and utilization of better information about the problem at hand. The information problem will be discussed at greater length in the next section. Suffice it to say here that the existing domestic interests have access to the system as it now exists. Indeed, the Population Coalition is regarded by those involved in it as a highly communicative structure. However, the major defect in the system as it presently functions is the failure to adequately reflect the conflict that inevitably emerges from the differentiated versions of the common concern which can easily reach it. A more effective treatment of the conflicting positions is likely to yield better policy choices.

As for the capacity to reflect the relevant foreign concerns, the domestic interests have demonstrated a sensitivity to them and a willingness to act as surrogates for their expression. This sensitivity to non-U.S. interests is reflected in the programmatic decisions to allocate increasing levels of U.S. funds for population programs that are administered by agencies of the United Nations. Indeed, the creation of the U.N. Fund for Population Activities, the principal U.S.-to-U.N. conduit, was accomplished largely at American initiative.

Beyond the programmatic choices that give prominence to the role of international agencies, there always has been the preoccupation for tailoring American inputs for bilateral population assistance growth to the cultural peculiarities of the recipients. Although it has been suggested that population control programs have been forced on unwilling recipients as a *quid pro quo* for other categories of aid, this technique, if it actually has been attempted, has not enjoyed notable success. In fact American sensitivities have created a cautious approach to furnishing assistance for population programs. Even where divergent local positions have existed, such as in Brazil, the U.S. choice has favored the withholding of aid. This behavior suggests that the particular off-shore interests and sensitivities whatever their quality, find their way into the policymaking system because the system is deliberately designed to be sensitive to them.

III. THE DIMENSIONS OF THE PROBLEM

In framing U.S. policy and proposing the related allocations of resources and activities, the critical opening question is: What do we know about the means for reducing rapid population growth in underdeveloped countries? And, if the objective is attainable without major outside intervention, what can the United States do about facilitating its achievement?

The major ingredients of the existing knowledge base—what we know and do not know—for making the related policy choices can be summarized as follows: 1. Rapid population growth in underdeveloped countries is caused by high rates of natural increase, *e.g.*, high fertility rates. Existing fertility rates are traditional, and in the past, were offset by high death rates, a linkage which maintained stationary populations. The success of death

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control measures has upset this population equilibrium, and thus rendered traditional fertility rates excessive. In the socieities where this equation prevails, population growth rates will be reduced only as a result of significant declines in fertility rates. Because of a deceleration function involved in the impact of fertility reduction on population growth rates, a population will continue to grow, though at decreasing rates for some 40–70 years following the point at which fertility rates have declined to the replacement level.

2. Fertility reduction is achieved by the will of the individuals concerned to plan and control their fertility, coupled with the availability of the means that enable them to do so. Though traditional means of fertility control have functioned in the past, and still do in some societies, they are no longer adequate, either for the maintenance of a stationary population, or the reduction of excessive population growth. Accordingly, modern contraceptive technology is a necessary, though not sufficient means for fertility control. The employment of modern contraceptive technology, and its impact on fertility, are determined by the motivations that cause people to use it. Thus the availability of contraceptive technology does not necessarily guarantee its use. In this case, supply does not automatically create demand.

3. The human fertility function is not completely understood. Contrasted with other areas of human understanding, our knowledge about human fertility can be characterized as underdeveloped. The state of the art in existing contraceptive technology is reflected in a 30% average failure rate among willing users in the United States.[5] Because of significantly greater deficiencies in local health, distribution, and follow-up systems, inadequate technologies create even higher failure rates among users in underdeveloped countries. Moreover, the same local deficiencies limit the availability and use, and thus the potential impact, of existing technologies among populations in underdeveloped countries.

4. Significant declines in fertility rates are associated with the improved distribution of income among poorer sectors of a population, *e.g.*, the lower 40% of the income scale.[6] This relationship has been observed in countries whose fertility rates and population growth rates have declined noticeably over the past decade, including Costa Rica, Hong Kong, South Korea, Singapore, and Taiwan. Sustained high rates of economic growth and rising per capita incomes in the absence of an improved distribution of the increments are not associated with declines in fertility and population growth rates. This phenomenon is illustrated by the cases of Mexico, Brazil, and the Philippines.[7]

5. On a nationwide basis, organized fertility control programs, *e.g.*, family planning programs, appear to be associated with significant declines in fertility rates only in cases where the decline was underway prior to initiation of the program. This relationship has been observed in countries which have organized nationwide programs, and have experienced significant fertility declines, such as Costa Rica, Hong Kong, South Korea, Singapore, Trinidad, and Taiwan. Although a national fertility control program is not associated with declines in the nationwide fertility and population growth rates in India, fertility declines are reported in states where organized programs are coupled with improvements in the well-being of their populations.[8]

6. The independent impact on fertility of organized nationwide family planning programs in underdeveloped countries has not been established, principally because of methodological problems in segregating the relevant variables.[9] Conflicting claims and explanations of the significance of these programs are available. One position holds that organized programs are the most significant cause of fertility declines.[10] Another maintains that they have no independent impact on fertility.[11]

The resources of the major American donors (Ford, Rockefeller, and AID) have been allocated to population control activities on the assumption that the availability of contraceptive technology can

[5]Norman B. Ryder, "Contraceptive Failure in the U.S.," *Family Planning Perspectives*, 5 (Summer 1973), pp. 133–43.

[6]Rich, *op. cit.* R.C. Repetto, "The Relationship of the Size Distribution of Income to Fertility, and the Implications for Development Policy," Research Papers Series, No. 4, October 1974, Harvard Center for Population Studies, Cambridge, Mass.

[7]Rich, *Ibid.*

[8]Roger Revelle, "The Balance Between Aid for Social and Economic Development and Aid for Population Control," *International Journal of Health Services*, Vol. 3, No. 4, Fall 1973, pp. 667–674.

Philip M. Hauser, "On Family Planning—Next Steps," Unpublished paper based on a transcription of an extemporaneous presentation to guests of the Pathfinder Fund, Boston, May 18, 1970.

[9]Jack Reynolds, "Measuring the Demographic Effectiveness of Antinatalist Policies," Paper prepared for the General Conference of the International Union for the Scientific Study of Population, Liege, Belgium, August 27-September 1, 1973.

[10]R. T. Ravenholt and John Chao, "World Fertility Trends, 1974," Family Planning Programs, Population Report, Series J, No. 2, August 1974. The George Washington University Medical Center, Washington, D. C.

[11]Reynolds, *Op. Cit.* Philip M. Hauser, "Family Planning and Population Programs," *Demography*, 4, 1, 1967, pp. 397–414.

"Non Family Planning Methods of Population Control," in Nafis Sadik, et al. (ed.) *Population Control: Implications, Trends, and Prospects*, Islamabad: Pakistan Family Planning Council, 1969.

Dudley Kirk, "The Effectiveness of Family Planning Programs in Less Developed Countries: The Evidence from Survey Data," Food Research Institute Studies in Agricultural Economics, Trade, and Development, Stanford University, 10 (1) 1971.

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make a significant impact on fertility rates, and through their reduction, on population growth rates in underdeveloped countries. (see Annex A) These activities have involved a mix of the following ingredients: research in reproductive physiology and contraceptive development; research in the nonbiological aspects of fertility behavior; research in the social and economic correlates of fertility behavior and population growth; technical assistance in the planning and management of fertility control programs; supply of contraceptive materials; and teaching and training in the performance of the foregoing activities. A functional distribution of the funding for these activities since the inception of large-scale aid by these three major donors is available as Annex A. It reflects the preponderance of investment in the organizational and supply areas (delivery of technology), as contrasted to the research areas (creation and dissemination of additional knowledge).

The added value of American inputs in creating fertility decline where it has occurred has not been definitely established. Where significant declines have occurred they started prior to the American inputs for reasons indigenous to the society involved. Therefore, it is reasonable to inquire about the role of the American investment in facilitating or accelerating them. Reciprocally, the opportunity costs of American investments in places where significant fertility declines have not occurred has not been established. The availability of information on these issues would be helpful both in evaluating past performance, and in so doing, suggesting some alternative choices to guide allocations of American resources for fertility limitation.

For example, the results of past performance might suggest the concentration of American resources in closing the knowledge gap and improving the state of the art, rather than in the continued supply of technology and materials. And where technical assistance and materials are made available, they might most effectively be supplied on a highly restrictive and selective basis to countries already experiencing a significant turnaround of fertility rates, and in which outside resources are required to expedite the process.

Despite claims to the contrary and existing programmatic commitments in the U.S. government, it is reasonably clear that the solution to rapid population growth in underdeveloped countries is beyond the capacities of technological innovation alone. Something has to happen within countries and societies to trigger and sustain significant declines. What we know is that high rates of population growth persist unless these things happen.

Even if population growth rates begin to decline now, and barring any nuclear calamities, the world's population will double in the next 30–40 years. The significance of this phenomenon in terms of American interests is disputed. There are those that suggest that life in the world as we know it and like it will collapse if population growth is not stopped.[12] Others claim that the world has a carrying capacity of a population much larger than it is likely to have.[13] For present purposes, it is not necessary for me to engage in this global discourse, but merely to state my conviction in favor of the position expressed by the so-called "technological optimists."

Therefore, as a base for policy choices designed to meet American interests, I will stand on the ingredients of interdependence expressed in the first section of this paper which suggest that rapid population growth in underdeveloped countries intersects American interests only indirectly by aggravating political and economic conditions that are inconsistent with our foreign policy objectives.

We must be prepared to deal with these political and economic disturbances to American foreign policy objectives in a manner appropriate to each with a combination of tools that might include the application of political influence, the utilization of economic benefits, the creation of strategic advantages, and the like. None of these tools are designed to exert a direct influence on conditions of rapid population growth. They are employed in attempts to correct adverse conditions to which rapid population growth, in some cases, may contribute. But these are conditions that require a direct approach. The amelioration of rapid population growth in the short and intermediate term, even if possible to achieve, is unlikely to be the critical factor in creating outcomes more favorable to U.S. foreign policy objectives.

Thus, in the foreign policy context, U.S. efforts to influence rapid population growth in underdeveloped countries are most realistically viewed in a modest and a long-term framework. Where the odds are reasonable that efforts deployed through our foreign aid programs might facilitate declines in fertility and population growth rates, we should undertake them. But in so doing, we should discourage fanciful expectations for the positive impact of these efforts on the population variables, and certainly on the major foreign policy issues in which they may play an auxiliary role.

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[12]Paul Ehrlich and Ann H. Ehrlich, *Population Resources and Environment: Issues in Human Ecology*, San Francisco: W.H. Freeman and Co., 1970.

Garrett J. Hardin, "The Tragedy of the Commons," *Science*, Dec. 13, 1968. 162: 1243–48.

[13]Roger Revelle, "Food and Population," *Scientific American*, September 1974, Vol. 231, No. 3, pp. 160–172.

"Introductory Proposal on Prospects for Mankind," Unpublished Paper, Hudson Institute, Croton-on-Hudson, N.Y.

Wilfred Beckerman, *In Defense of Economic Growth*, London: Jonathan Cape, 1974.

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There is a danger in the creation of unrealistic expectations resulting from urgent American action in an area whose effective manipulation is beyond our reach. By so behaving, we create unattainable expectations, both abroad and at home, for early solutions. Already the political disenchantment in Congress associated with the creation of such expectations has had an impact on the availability of federal funding in the population field, as it has had for some years on the availability of federal funding for foreign aid as a whole. And this disenchantment is largely the product of the expectations surrounding the initiation of large-scale American foreign aid in the population field in 1967. The program was rationalized to Congress in terms that suggested immediate action by the United States to control population growth was both urgent and could produce some desirable results. It is recalled that during the late sixties both the legislative and executive branches, confronted with increasingly intractable problems at home and abroad, were anxious for promising formulas that might ameliorate them. Population control was projected as an elixir which could contribute to the avoidance of further global deterioration, and at the same time a reduction of the international welfare burden of which the Congress felt we were carrying a disproportionate share.

Since significant structural rearrangements in high growth countries are most likely to create conditions that would decrease their rates of population growth, the United States, assuming we are not inclined to intervene directly and effectively to impose these rearrangements, would most realistically consider a more parsimonious and narrowly-focused role in its related activities. This role would be based on what we can do best to facilitate fertility declines with resources and opportunities now available to us.

As conditions for fertility decline evolve in a society, and the declines actually begin, conditions exist where additions of external combinations of knowledge and technical assistance might facilitate and expedite the process. Although the relationship is not definitively established, there has been an association between organized family planning programs and fertility decline in several countries where the American foreign aid was provided.[14] As comparable situations emerge, aid investments may well be worth the risk, because until proven otherwise, our inputs appear to be having some effect at the margin.

Such situations also provide additional opportunities to verify these relationships. Earlier it was suggested that as a result of deficiencies in our information base, we were tending to fly blind in making policy and program choices. Accordingly, in considering the redesign of functional priorities and the associated organizational structure to carry them out, we need to give greater weight to the research activities that would enlarge our knowledge. In the area of biomedical research alone, Harkavy and Maier have suggested that an annual level of $200 million could be productively utilized. (FY 1973 funding for biomedical research is available at the annual rate of $32 million.) At present the federal research responsibility in reproductive physiology is largely the function of the Center for Population Research in NIH. However, since this research has global applicability, it is appropriate that the foreign policy institutions assume a greater responsibility for it. In addition to the biomedical research, there is a corresponding need for production of more reliable methodologies and information in the nonbiomedical areas. Finally, it is essential that conduits be developed to channel the developments, findings, and other sorts of information that emerge from the research into the decision making system, in a structure that assures its use in subsequent policy choices.

The existing structure is inadequate to this revised mission. There is first the division of functions between the domestic agency, NIH, and the international agency, AID. An effective structural merger of mutual interests is required to develop a government-wide approach in an expanded program of population research.

A more detailed discussion of the organizational arrangements required for this pattern of activities, including proposals for linkages to the Congress, structured collaboration between NIH and AID and the more systematic utilization of the nongovernmental scientific community, follows in Section VI.

IV. U.S. POLICY INSTRUMENTS

It has been suggested that the *de facto* American occupation of Taiwan and South Korea resulted in the imposition of structural changes, such as land reform, and conferred certain benefits, such as significant economic support, that influenced the development of those countries. The particular development pattern that evolved in both South Korea and Taiwan, among other things, created a more equitable income distribution pattern that is associated with declining fertility rates in both countries. Thus the direct American presence or intervention in these cases contributed to declining fertility and population growth rates.

It is unrealistic to contemplate direct American intervention as a tool of American foreign policy.

[14]Ravenholt and Chou, *Op. Cit.*

Such a prospect would be indigestible to the American body politic. Perhaps the only exception to this generalization is an intervention in the oil producing areas of the Persian Gulf if the conduct of the oil producers became intolerable in terms of American economic interests. However, since the United States derives such a small proportion of its petroleum imports from that area, this particular intervention is highly unlikely. Thus it can safely be said that the United States has neither the will nor the capacity for direct interventions, and the structural side effects of American presence in Taiwan and South Korea will not be replicated elsewhere. Besides, the prolonged American physical presence in the Philippines and a shorter stay in Vietnam did not leave in their wake structural changes conducive to a more just distribution of advantages in those societies.

Thus, any U.S. involvement to improve the structural development of underdeveloped societies will have to rely on the more traditional instruments, such as infusions of various sorts of resources, including capital and technology. Over the past 25 years the use of these instruments has not been notably successful in creating development. The lesson we have learned from our prolonged foreign aid experience is that development cannot be purchased from the outside, but rather must be created internally. External resources can only facilitate a process that is already underway within a society. The few notable success stories, including South Korea, Taiwan, Yugoslavia, Lebanon, and Israel in our foreign aid experience, attest to this precondition.

The reality that development cannot be externally purchased challenges a rather simplistic formulation acquiring increasing popularity: the linkage between development and declining birth and population growth rates. In its misleading form, this formulation is expressed to suggest that funds devoted to population control should be reallocated to an unspecified array of development activities. The formulation was expressed with great ideological and rhetorical flourish at the recent Bucharest World Population Conference.

But just as declining fertility and population growth rates cannot be manipulated from the outside by infusions of money and technology, neither can the conditions of development be bought for insiders by outsiders. Thus, it is unrealistic to contemplate a reallocation of population assistance funds from the more narrowly-defined fertility control programs to broad sectoral programs in areas such as education and rural development, whose improvement is associated with better conditions of development and declining fertility. Even under favorable structural conditions in a particular society, *e.g.*, a meaningful regime commitment to the improved distribution of economic and social opportunities, the level of resources involved would yield a negligible impact. Such trade-offs would be meaningless. Consider, for example, a significant regime commitment to the expansion of education for females. How many additional days of education over what period of time could be purchased by funds reallocated from family planning to education, and would the increment do much for female educational opportunity? A trade-off of this sort is not likely to be meaningful either for population or for development objectives.

And what of the more typical cases where meaningful regime commitments to increased educational and other opportunities do not exist? A reallocation of aid resources does not yield a commitment, which is the critical factor in creating conditions for sound development in which human fertility and population growth decline.

Thus in considering alternatives to existing population limitation strategies, we had best resist the increasingly fashionable, but spurious, dichotomy of "population or development." The most realistic alternative would emerge from an appreciation, based on a quarter century of experience, that neither development nor population limitation can be induced by external assistance. The critical conditions for both are created by commitments internal to the societies involved. Once the conditions exist, external aid can function in a limited role as a catalyzing or facilitating agent.

This reality might well inspire greater modesty about our capacities to achieve results in both population and development, and in developing policy choices cause us to ponder how the American contribution might be made within realistic limitations by making effective use of resources already at our disposal. Among other advantages, such an approach increases our odds for obtaining greater value out of the decreasing financing available for foreign aid

In the preceding section I suggested a more parsimonious approach to American foreign aid for fertility control, much of which would be conducted in the United States. This approach involves a major effort to perfect knowledge and technology that can be employed to hasten and facilitate declines in fertility rates where the process already is underway. Since the function would be accomplished largely within the United States on the basis of a relationship among domestic institutions, such as government, the foundations, and the relevant academic and scientific institutions, the political arena thereby created would be confined to the participation of existing domestic interest groups. The related organizational arrangements would require a structure to facilitate joint activity among private and public institutions.

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The existing structure that was earlier characterized as "The Population Coalition" lends itself to this sort of mission by providing the channels for an "insiders" discourse. Since the institutions and interests involved are domestic, policymaking would transpire within a domestic political arena.

American activities abroad on behalf of population limitation would continue to be deployed through existing technical assistance mechanisms, and involve relationships with foreign and international institutions. In the population field these relationships are facilitated by an international version of the domestic population coalition. This international version is comprised of a comparable mix, including national affiliates of the International Planned Parenthood Federation, academic departments and research centers, governmental research and service institutions, and government agencies. These institutions are increasingly staffed by individuals who have been formally trained in, or otherwise exposed for significant periods to American institutions. The international network is linked together in a number of structures, including the International Union for the Scientific Study of Population, regional conferences sponsored by international bodies, institution-to-institution ties, and joint participation in projects financed by American foundations and governmental sources. The people involved share common professional and scientific interests and tend to see a lot of each other. Their high degree of mobility has been characterized as "the population jet set".

This professional and scientific network, that has evolved over the past 20 years, facilitates not only the framing of common scientific priorities but also the development of activities that require government-to-government relationships. Because the foreign participants in the network frequently are influential with local political leaders, the necessary intergovernmental political relationships are eased. Thus the professional/scientific network provides a more effective structure than would formal regime arrangements in transacting bilateral and multilateral policies and programs.

V. INTERNATIONAL ORGANIZATIONS—THEIR GOALS AND CAPACITIES

As a result of American initiative, the United Nations system has been called upon to assume an increasing role in the deployment and management of resources for the limitation of population growth. The American initiative is based on the untested premise that activities developed and managed through the U.N. system are more tolerable than those created on a bilateral basis. It is important that this presumption about the quality of multilateral acceptability never has been systematically evaluated, because it appears to have evolved into a form of conventional wisdom that has influenced the allocation of increasing levels of American foreign aid to the U.N. system. To provide a more rational basis for making judgments about the most effective utilization of American foreign aid resources in the population field as well as others, the assumption about the U.N. system in terms of its capacity and acceptability should be thoroughly evaluated.

The international system has been involved in fertility and population issues since the days of the League of Nations, principally through its specialized agencies. The activities of the International Labor Organization (international migration), the World Health Organization (maternal and child care), and the Statistical Commission (the accumulation and analysis of population data) started under the League and continued under the U.N. Influenced by mounting concerns about rapid population growth during the late forties and early fifties, population issues acquired greater priority on the U.N. attention span. In addition to the specialized agencies historically involved, others developed interests which were related to their central missions, including UNESCO (population education), FAO (food supply and population growth), UNICEF (the supply of materials and facilities for family planning programs). The U.N. Population Commission provided the forum in which the issues could be debated and U.N. positions determined.

A U.N. Population Division was established in the Secretariat as a staff function. And as the result of energetic U.S. efforts, an overall funding agency was created in 1969 as the U.N. Fund for Population Activities. The function of the Fund is to serve as a receptacle for contributions from member nations, and to bankroll activities conducted through the U.N. Development Program and specialized agencies. In Fiscal Year 1974, the United States contributed $18 million to the UNFPA, and an estimated $20 million is earmarked as the contribution in FY 1975.

In terms of its traditional role, the entry of the World Bank into the population field might appear somewhat anomalous because the Bank, after all, is a capital lending institution. The Bank's interest, however, is largely the product of the anxieties and concerns of its President, Robert McNamara, who has expressed himself frequently and vigorously on the subject of rapid population growth. Because of its traditional functions, the Bank has had some problems staking out a role for itself in an area where activities do not lend themselves to the conventional investment format, even for development

purposes. Thus far, the Bank's major lending activities have provided financing for physical plants for the provision of family planning services in Jamaica and Indonesia. Beyond its lending activities, the Bank has established a Population Projects Division which provides staff resources to backstop in-house population interests. Among other results of the Bank's population interests is the internal requirement for population growth impact statements in the country and project studies and evaluations. These analyses provide a useful source of information for judgments about investments in national development programs.

Regional and global conferences are a major ingredient of U.N. Population activities. The latest and most prominent of these meetings was the World Population Conference held in Bucharest in August 1974 as the culmination of World Population Year. The meeting was designed by its sponsors to express a meaningful international commitment to ameliorate rapid population growth. The results of the Bucharest meeting were something quite different, and may justifiably contribute to whatever skepticism exists about the wisdom of increasing reliance on the U.N. system as a preferred, much less a chosen, instrument for the achievement of U.S. foreign policy goals in the population field. If a reasonable discourse on population matters among concerned and knowledgeable people was the objective, the Bucharest meeting had best not have been held at all. The Conference deteriorated into a scene of ideological rhetoric, which shed little light on remedies for rapid population growth and underdevelopment. The meeting assumed the configuration of an adversary contest, with most of the developing countries, encouraged by the Soviet Union and China, ganging up on the United States and the other developed nations of the west. The association between internal development and population growth emerged as the preoccupation of the Conference majority. But the frustration of national development was rhetorically and incorrectly linked to a global maldistribution of resources among nations, rather than to internal maldistributions of social and economic opportunities within individual countries, particularly the underdeveloped countries experiencing higher population growth rates.

The Bucharest meeting thus was a highly politicized event, and to the extent that the politicized guidelines produced at Bucharest influence activities of the UN agencies, the opportunity for a reasonable alignment of these activities is eroded.

It is possible that the Bucharest phenomenon, and the ongoing population activities conducted by UN specialized agencies, will proceed on two distinct levels which are unrelated to one another. If this is so, the United States justifiably can consider its linkages to the specialized agencies on the basis of their performance and potential. If not, and if the specialized agencies are increasingly endangered by politicization as the recent UNESCO experience suggests they may be, then the United States justifiably would reconsider its relationships and the conditions for its U.N. investments.

These are matters that require early attention, and it is not certain that existing organization arrangements in the U.S. government are adequate for the purpose. The sections of the State Department in the Bureau of International Organization Affairs that deal with the United Nations and its agencies tend to function as advocates of their clients. The relationship is comparable to that which exists between the aviation industry and the CAB.

With a proposed investment of $20 million for U.N. population activities this year, it is legitimate for the United States to require a meaningful evaluation of the structure in which the investment is proposed. Such an evaluation should be conducted by a disinterested and uninvolved party. Because of obvious congressional concerns about the outcome of such an evaluation, in addition to those of the executive branch, an evaluation might most effectively be conducted by the General Accounting Office which commands the institutional confidence of the executive and legislative branches alike. In such an evaluation, the GAO might profitably utilize the consultative services of specialists drawn from academic institutions and foundations.

Although the United States remains the major financial contributor to the United Nations system, the outcome of the Bucharest Conference, the behavior of the UNESCO Commission, and decisions at the recent General Assembly session suggest a decline of American influence in the formal structures of the UN system. The particular quality of American representation in the various components in the U.N. structure is not likely to correct the erosion of American influence. In our expectations on the utility of the U.N. system for the achievement of foreign policy objectives, we need to reconsider the somewhat romantic notions about its capabilities that have influenced our past relationships. Instead we should impose a rigorous system for determining the benefits and costs, political as well as economic, associated with U.N. linkages. Whatever other value this analysis might have, it would provide a sound information base for the design of revised organizational structures in the American government for U.N. relationships. It would also demonstrate to the Congress, whose disenchantment with the U.N. is apparent and growing, a resolve by the executive branch to approach its U.N. relationships more critically.

VI. PREFERRED STRUCTURES AND FUNCTIONS WITH THE US GOVERNMENT

Available evidence suggests the limitations of what the United States can do to reduce population growth rates in underdeveloped countries. In redesigning our foreign policy priorities and strategies and the related organization structures, we need to accept these limitations and work within them. Although the entire range of cause and effect relationships is not known, it is reasonably established that technological innovation alone will not create a reduction in fertility, which is the principal cause of rapid population growth. Our foreign aid activities to date are based too heavily on unrealistic expectations for the potential of technological innovation.

At the same time, the root causes of excessive fertility in underdeveloped countries are created by existing structural arrangements that determine the distribution of opportunities and advantages in those societies. These are not susceptible to our direct manipulation. Accordingly, in our policy choices and the related organizational design, we need to reduce our expectations for the outcome of our intervention to a more realistic level. This shift in perspective appears to be evolving in the population coalition, but its impact has not been sufficiently implanted in the federal policymaking structure.

Reduced to a more realistic level, our foreign aid resources, whose availability is certain to decline, would be focused on activities that are determined by two factors: (1) those that make maximum utilization of capacities we enjoy; and (2) those that are likely to produce the highest yield in the short run, per unit of investment. Such a pattern of activities in population assistance would involve the following ingredients:

(1) The continued supply of technical assistance for fertility limitation programs, including the supply of contraceptive materials, to countries where these inputs will facilitate and expedite fertility declines already in progress.

(2) An augmented program of research in human reproductive physiology designed to open up new opportunities to develop improved contraceptive technologies; and the related research on contraceptive product development.

(3) Continuing research on the political, social, and economic correlates of fertility behavior.

To conduct this program, organizational arrangements are required for the following purposes: (1) planning and management of the technical assistance program; (2) planning and management of the research programs.

With certain modifications, the existing structure for the conduct of American foreign aid activities in the population field is suitable for a revised program. (The existing organizational structure is reflected in Annex B; the proposed organization in Annex C.) As it presently exists, operational responsibilities for the program are assigned to an Office of Population in AID's Bureau for Population and Humanitarian Assistance. The Office contains subdivisions responsible for areas such as supply, research, policy, and manpower development. The Office is subject to program guidance from the Bureau level.

Despite the presence at the Bureau level of some highly talented administrators, it is difficult to ascertain the unique contribution and added value that the Bureau makes to the Office's activities. The organizational separation appears to be redundant. Both the Office and the Bureau collectively are subject to decisions on allocations of program funds by AID's Bureau of Program Policy and Coordination, which functions as the AID Administrator's program budget staff. Although this staff has no particular competence in operational matters for which the Office of Population is responsible, it has attempted with little success to introduce a broader "development consciousness" into the Office's programmatic thinking, and by so doing force the Office to reduce its technological emphasis.

These internal bureaucratic linkages tend to create a diffusion of energies which inevitably results in internal organizational competition. The population program and the AID agency can ill afford this erosion of resources. Clearly there is a need for greater orchestration of interests and efforts within AID. The achievement of this coherence is an internal bureaucratic challenge soluble by more effective leadership and direction on the relevant echelons of AID.

Technical assistance activities for fertility limitation are deployed through health systems, such as they exist, in underdeveloped countries. There is a mandate in the authorizing legislation requiring a closer alignment of population and health activities. Yet, the Office of Health Affairs and the Office of Population still are located in two separate AID bureaus. This irrational alignment should be corrected in either one of two formats: (1) a combined Office of Population and Health Affairs within the Bureau of Population and Humanitarian Assistance; or (2) the reassignment of the Office of Health Affairs as a separate unit to the Bureau for Population and Humanitarian Assistance. In either event the organizational format would more closely reflect programmatic realities and requirements. Beyond this functional advantage, there would be an opportunity to achieve greater administrative economies.

To handle an augmented research program, the

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existing structure within AID requires scientific strengthening. There are two functions involved: (1) the determination of research policy and strategy, *e.g.*, the issues and problems which should be addressed; and (2) the allocation of research activity. In both functions, the small AID professional staff composed largely of officials without formal training in population dynamics, cannot be expected to carry the entire load. Moreover, particularly for the establishment of research policy, U.S. interests would be served more effectively by a more active involvement of accredited population specialists outside AID, principally from the academic and research institutions. Such an input could be obtained from a Population Advisory Committee that is discussed below.

Likewise, outside specialists should be involved in the allocation of research activity through a procedure comparable to the peer review system employed in the NIH study sections. These study sections are composed of qualified scientists and professionals who provide peer reviews of research proposals, and thus assure the maintenance of scientific quality and professional objectivity.

It was suggested earlier that an augmented research program supported by AID should be linked closely to the existing program supported by the Center for Population Research in NIH. Since both are involved in the same subject matter, a joint peer review system might be desirable not only to provide an institutional linkage, but also to make available a greater variety of qualified reviewers.

These proposals for the more effective planning and management of an expanded research activity envision greater reliance on the participation of specialists from outside the government. Beyond the research program, there are advantages in a comparable reliance for the establishment of U.S. policy objectives, and the related program strategies for population assistance.

The use of "outside" specialists in the creation of public policy raises a cluster of problems, including the preferred access of some specialists to policymaking machinery, the mixture of scientific and political judgments, the absence of public accountability, etc. In policy areas where tangible rewards are available for distribution to interested sectors of the American public, extramural involvement must be approached with great caution. But population assistance is not such an area.

In the population field the advantages of greater reliance on extramural participation in the policymaking process outweigh the costs. It was suggested earlier that the knowledge based upon which policy choices are made suffers significant gaps. There is no scientific consensus on the most desirable policy remedies for achieving U.S. foreign policy objectives, and under these circumstances there is the danger that the scientific biases of those closest to the policymaking process will dominate the policy choices. All the more reason, then, for employing the maximum available knowledge, including the differential interpretations of it, in the policymaking discourse. This sort of discourse does not now prevail within the responsible government institutions.

Such an expanded discourse requires the participation of all who have something of value to contribute to it. Most of the relevant professional and scientific specialization is located in institutions outside the government, principally in the foundations and the universities, and is not available to the federal government on a permanent career basis. With this distribution of skills, the development of structures and procedures for the more effective exploitation of the extramural scientific community would contribute to improved policymaking. The role of the "outsiders" would be confined to an expansion of the discourse on the basis that more effective policy alternatives might evolve. The choices of whatever policy options are developed would be accomplished by those responsible for doing so, the public officials in the Executive Branch and the Congress.

For the responsible executive branch agency, the extramural contributions at the policymaking level could be structured as a Population Advisory Committee, attached to the AID Assistant Administrator for Population and Humanitarian Assistance. In its functions and relationships, such a group might be modeled on the more effective advisory groups now in existence, such as the NIH Councils, or the USIA Information Advisory Committee.

For the Congress, the linkage is best obtained by increased utilization of nongovernmental specialists in hearings on the authorizing legislation. It is notable that during the House and Senate Committee hearings on the foreign aid authorizing legislation last year involving an item of $135 million for population assistance, there was no testimony from nongovernmental population specialists. The item was transacted on the basis of routine testimony from the responsible executive branch officials. The absence of testimony from qualified nongovernmental sources made the legislators completely reliant on information provided by the executive branch, and denied them and their staffs the opportunity to make choices on the basis of a wider range of information and alternatives.

Some alterations may be desirable in intra-agency relationships. In 1968 a position of Special Assistant to the Secretary for Population Matters was created in the Department of State. This position was prompted by the desirability of providing additional tangible evidence for the American government's commitment to population limitation ac-

tivities and to encourage the participation of other governments and the United Nations in these activities. The sole occupant of the position, who retired in December 1974, was a long-time State Department hand by the name of Philander P. Claxton, Jr. He was uniquely suited for the role by virtue of his previous experience as the congressional liaison man for the foreign aid program. Claxton functioned effectively as a "Mr. Outside," appearing before congressional committees, various U.N. forums, professional meetings, international conferences, and the like. However, now with Claxton retired, and with fertility and population limitation legitimized as an ingredient of bilateral and multilateral foreign aid programs, the requirement for missionary work conducted out of the State Department is marginal.

Under a recent organization plan, State has transferred the function to a new Bureau of Oceans and International Environmental and Scientific Affairs. It appears that this unit is basically a transmission belt for the functional concerns within its jurisdiction. Representational functions on the outside and advisory functions on the inside are most effectively conducted by whatever unit of government has operational responsibilities and thus is professionally equipped for the role. Accordingly, the role envisioned for OES in population (and the other areas as well) is structurally and functionally redundant.

It is unrealistic to expect that small technical enclaves in the State Department can compete effectively in the scientific, bureaucratic, and political arenas with agencies whose reason for existence is a particular technology. State is in business to conduct the diplomatic business of the United States. And whatever the scientific complexities that have emerged in diplomatic relationships, the process remains essentially a traditional one involving bilateral political relationships among nations. Thus the *modus operandi* of the State Department, including the organizational framework, recruitment norms, and professional reward structure, is geared to this traditional concept. Under the circumstances, the scientific and technological ingredients of diplomatic practice are best handled not by "technologizing" the State Department, but by "internationalizing" the agencies that specialize in the particular functional area, and already possess the required professional and scientific competence. For its technological needs State should look to resources elsewhere in the government, and in the country at large. The creation of intramural competence should be viewed on a government-wide, and countrywide, basis, not limited to a departmental perspective. There are replicas for handling the nondiplomatic specializations in this manner in the foreign affairs organizations of other countries (*e.g.*, the U.K. and Israel, to cite a couple) where the foreign office draws on governmental agencies with the required competence in trade, finance, public information, and science and technology for positions and personnel.

In the population field, an operational arm of the State Department—AID—already enjoys a credible technical capacity. The effective utilization of this capacity for diplomatic and other purposes that are not purely technical is a function of effective internal leadership and management within State/AID. Beyond the in-house capacity, there is additional skill and knowledge in the Department of HEW, which presumably could be exploited on an interagency basis. Such utilization is a function of effective management within the executive branch, which under existing structural arrangements might best be achieved by a scientific/technological counterpart to the National Security Council at the White House level. If equipped with the required political influence and leverage, including an intimacy with the President, this structure could conceivably achieve for science and technology what the NSC has obtained for international relations—a preeminent policy role involving the power to orchestrate the relevant U.S. policymaking.

With specific reference to population matters, since AID is the focal point for U.S. government foreign aid activities in the population field, all dealings on the international scene, whether bilateral with foreign governments or multilateral with the U.N., should be conducted out of the AID Population Office. Moreover, since AID is part of the State Department, there is no reason that an AID official cannot function as a spokesman for the State Department in international as well as domestic forums.

If the position in the State Department is continued, it should be filled on a rotating basis by a qualified and recognized population specialist, who can perform as "Mr. Outside" by virtue of his professional credentials. The job could possibly be filled by interested professors on sabbatical leave from their institutions.

There are limitations on the formal structuring of effective relationships with the legislative branch. As suggested earlier, there are four committees in Congress involved in foreign aid/population activities, and they are committees with full agendas whose members and staff are overburdened with a wide range of responsibilities. Theirs is no different from the chronic condition of over extension that afflicts all serious committee members and staff aides on Capitol Hill. Accordingly, interests in population issues are most likely to be a function of personal and intellectual proclivities. (At present, there is only one staff aide with a significant continuing interest in population assistance.) Where these inclinations are recognized, they should be

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encouraged in a tangible way by complete sharing of information and concerns by executive branch counterparts.

The most effective executive-legislative relationships occur on the staff level. They are relationships that cannot be formally structured but must be carefully cultivated.

The value of an effective legislative relationship cannot be overemphasized. The Congress is asserting itself more energetically and definitively in foreign policymaking, *e.g.*, Indo China aid; Turkish aid; SALT; and the Jackson Amendment. An assertive and independent congressional role, which is likely to persist, provides a particularly valuable asset in securing a hearing for foreign policy issues cast in less traditional formats that do not conform to the prevailing bureaucratic preferences and structures in the executive branch. Among these are issues involving nonmilitary science and technology, human rights, and technical assistance of various sorts, including population assistance. Such issues have not developed articulate constituencies, in the executive branch or the public or both. An interested and politically effective congressional constituency can compensate for the deficiencies by at the least providing a visible and audible alternative forum in which the relevant dialogue might be fully developed, and at best, by supplying political resources to back desirable policy initiatives and outputs.

These Congressional constituencies do not emerge from patiently designed organization charts, or other formal arrangements. They are most likely to evolve as the product of communication between individuals in and out of the government and members of Congress and their staffs. Legislators often respond to new concepts and issues, but they rarely enjoy the staff resources and data sources to deal effectively with new agenda items, and so limit their involvement. By augmenting legislators' staff resources, the supply of information, analysis, and counsel (in usable written form) from knowledgeable outsiders encourages commitments and involvements that otherwise would not happen.

Donor Funding Preferences

An analysis of the funding preferences of the major American donors conducted in 1971 disclosed a functional distribution reported below. There has been no significant change in the distribution pattern during the interim:

A review of the strategies of the leading American donors suggests a marked preference for family-planning objectives sought mainly through the biomedical route.

Until the United States Government entered the field in the mid-sixties, the Ford Foundation was the largest source of funding for population activities in the United States and abroad. From 1954, when the first Ford population grant was made to the Population Council, until 1971, Ford granted a total of $153.4 million in the population field. Of this total approximately 54 percent was spent for activities in reproductive biology and contraceptive development. The remaining 46 percent was allocated for non-biomedical programs in family planning and other population-related fields.

The distribution of support by other major donors between the biomedical and non-biomedical activities reflects an emphasis more heavily weighted than Ford's in favor of priorities in reproductive biology and contraceptive development supportive of family-planning objectives. Thus, the Rockefeller Foundation allocated approximately 56 percent of its population resources to biomedicine, with another 38 percent to the closely related priority of family-planning-services program development. The Population Council spent approximately 40 percent of its resources for activities in biomedicine, another 36 percent for family-planning services, and 23 percent for social science research, a significant portion of it in support of family-planning strategies.

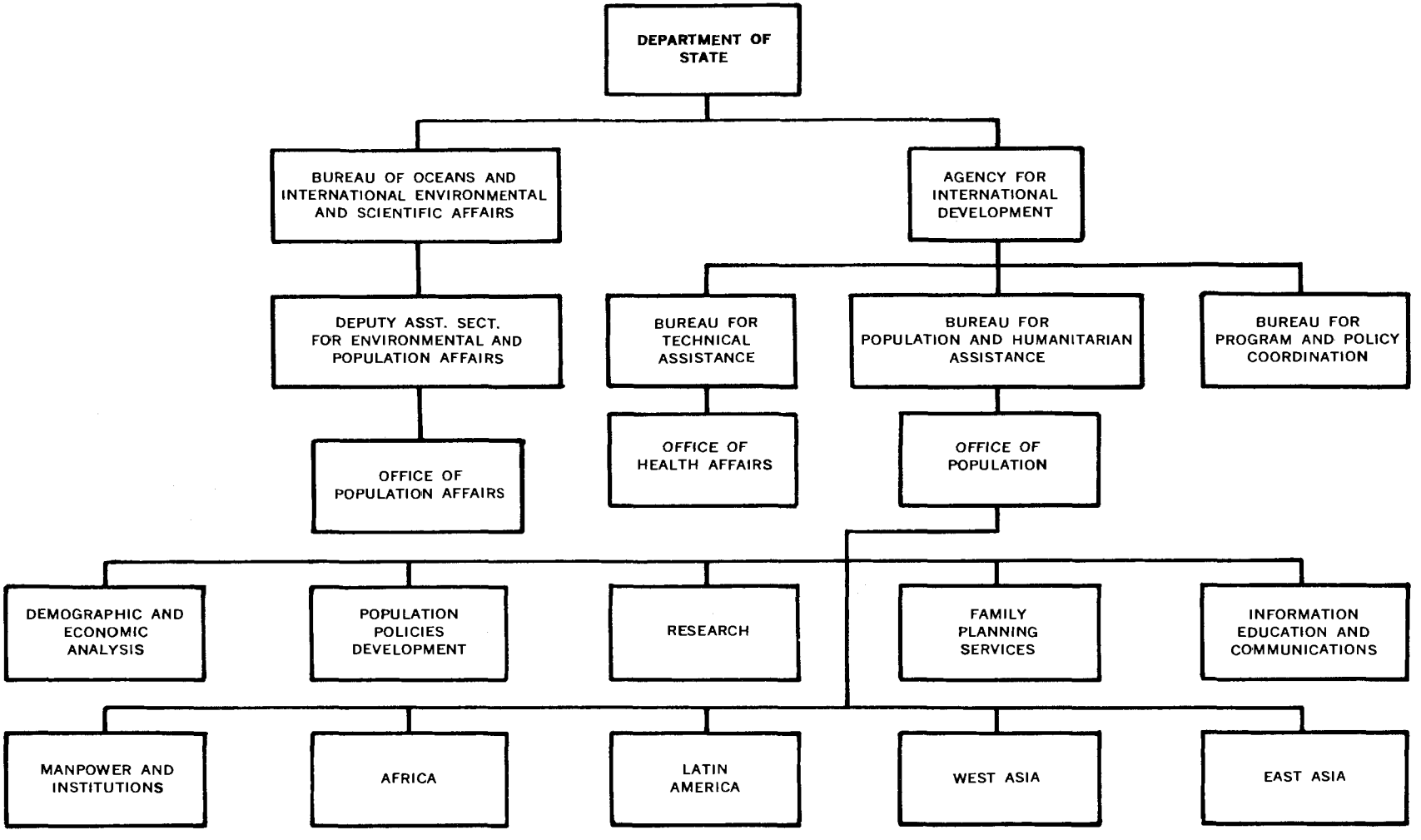
One of the explanations for the substantial Rockefeller Foundation and Population Council allocations in the biomedical field is their continuing commitment to Rockefeller University, which houses the Biomedical Division of the Population Council, one of the world's foremost research institutes in the field of reproductive physiology and contraceptive development.

U.S. government allocations in the population field also reflect a preference for family-planning program development and related activities in biomedicine. Institutional development and research support from government sources have been distributed approximately as follows: 68 percent for the biomedical and family-planning field, and 32 percent for other activities, many of which relate directly to family-planning priorities.

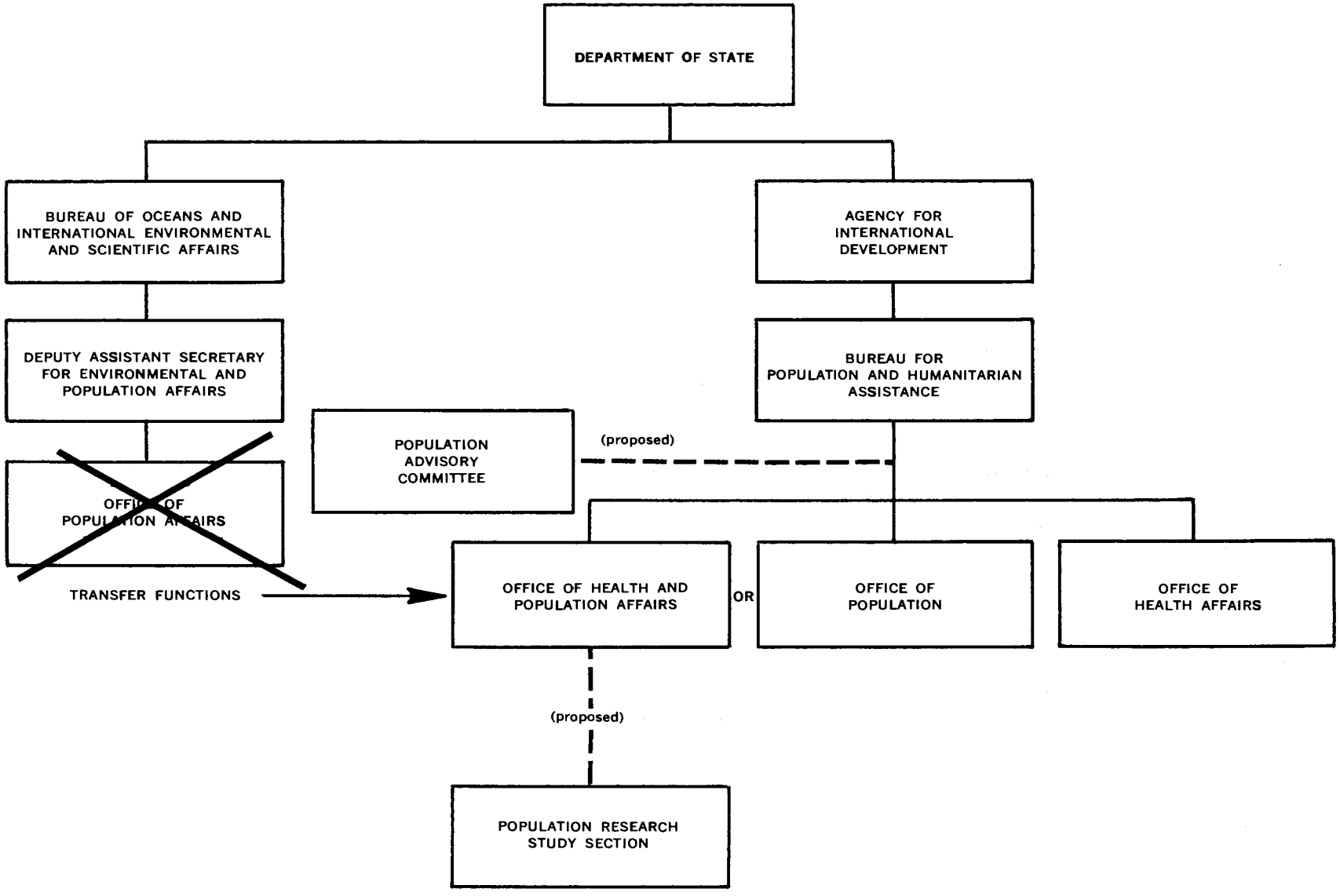
The U.S. foreign aid program, administered by the Agency for International Development, has accorded priority to family planning. The distribution of AID support since 1965 is approximately 81 percent for family-planning activities, including research in reproductive physiology and contraceptive product development, and the creation of more effective contraceptive delivery systems; and 9 percent for activities not directly related to family-planning programs. Within projects totaling $233 million between 1965–1971, $21.7 has been allocated for non-family-planning activities.*

*(Source: Peter Bachrach and Elihu Bergman, *Power and Choice: The Formulation of American Population Policy*, Lexington: D.C. Heath & Co., 1973, pp. 58–60.)

ANNEX B
EXISTING FOREIGN POLICY ORGANIZATION FOR POPULATION ASSISTANCE



ANNEX C
PROPOSED CHANGES



The Nuclear Power Industry

Irvin C. Bupp and Jean-Claude Derian
March 1975

I. POWER REACTORS: A NEW MULTI-BILLION DOLLAR INTERNATIONAL BUSINESS

"If the radiance of a thousand suns were to burst at once into the sky, that would be like the splendor of the Mighty One . . . I am become death, the destroyer of Worlds."
—Bhagavad-Gita

In the thirty years since the Trinity detonation on the New Mexican desert, Dr. Oppenheimer's instinctive recollection of the lines from the ancient Hindu legend has itself become a nearly legendary part of society's attempts to come to terms with the technology of nuclear fission. However, by the early 1970s, hope had replaced despair about the social implications of the technology among government and business leaders in practically every nation of the world.

India, the most recent country to master the technology of explosive fission reactions, looks upon its growing capability to produce electricity from controlled reactions as its "escape route from poverty."[1] The Indian position is hardly an isolated case. By September 1974, almost 600 electric power producing nuclear reactors were on order, under construction, or in operation in the world (see Figure 1). This alone represents a minimum investment of $200 billion (1974 dollars)—independent of antecedent or concurrent investment in research and development (at least an additional $20 billion), uranium extraction, refining, enriching, and eventually fuel reprocessing. At the end of 1974, some 50 companies were selling reactors in non-Communist markets, together with an additional 2,000 companies involved to some extent in other aspects of the reactor business. The development of this enormous international business since World War II is a unique phenomenon in the history of the industrialized world in its relative as well as absolute scope and consequences. In terms of research and development alone, the aggregate direct support by world governments of the development of the technology was by far the largest effort ever made toward the development of a new technology.

In the United States, this effort has been surrounded, if not overrun, by controversy from the outset. Throughout the 1950s, there was a protracted ideological squabble between the conservative Republican Chairman of the Atomic Energy Commission (AEC) and the New Deal Democratic leadership of the Joint Committee on Atomic Energy (JCAE) over government versus private responsibilities. The result of the disagreement was a series of compromise arrangements in which the AEC provided construction and operating subsidies for experimental reactors of various types which upon completion were to be operated as part of commercial generating systems. This "Cooperative Power Reactor Demonstration Program" eventually involved five joint ventures between the AEC and investor-owned utilities and four with cooperative or government-owned companies. It had little or no direct influence, however, upon the development of a true commercial market for nuclear power in the U.S. Then as more recently, the chief focus of the AEC program was to explore more efficient ways of "burning" uranium, on the assumption that the dominant constraint upon reactor commercialization—and hence upon realization of the fruits of the "peaceful atom"—was uranium scarcity.

In the meantime, the Westinghouse Electric Corporation had lost no time in taking advantage of its experience as the AEC's prime contractor for submarine propulsion reactors. The first power producing pressurized water reactor (PWR) was built by Westinghouse at Shippingport near Pittsburgh, Pennsylvania, in the early 1950s. General Electric soon developed its own variant of a reactor technology in which "light" (i.e., ordinary) water is used

[1]Daniel P. Moynihan, the former U.S. Ambassador to India, has recently told an MIT audience that the Indian government believes that the subcontinent will be a major beneficiary of what they see as the impending "nuclear revolution in energy supplies." *Boston Globe*, March 9, 1975.

FIGURE 1.—WORLD-WIDE NUCLEAR REACTORS, APRIL 1974

	Built or Committed	*Planned Options*	*Total*
Argentina	2	2	4
Austria	1	1	2
Bangladesh		1	1
Belgium	4		4
Brazil	1		1
Bulgaria	4		4
Canada	15	2	17
Czechoslovakia	5	5	10
Democratic Republic of Germany	3	2	5
Denmark		1	1
Federal Republic of Germany	27	18	45
Finland	3		3
France	29	14	43
Hungary	1		1
India	8		8
Iran*		5	5
Ireland		1	1
Israel		1	1
Italy	9	1	10
Japan	29	25	54
Korea	2	2	4
Luxemburg		1	1
Mexico	2		2
Netherlands	2		2
Norway	1	1	2
Pakistan	1		1
Philippines		2	2
Poland		1	1
Spain	12	8	20
South Africa		1	1
Sweden	12	7	19
Switzerland	7	1	8
Taiwan	4		4
Thailand		1	1
United Kingdom	21	14	35
U.S.A.	226	15	241
U.S.S.R.	16	12	28
Yugoslavia	1	1	2
TOTAL	448	146	594

SOURCE: *Nuclear Engineering International*, April 1974
*"Press reports in early 1975 strongly suggest that Iran plans to order several additional reactors.

as a neutron moderator and coolant. By 1965, both G.E. and Westinghouse had signed turnkey contracts with investor-owned utilities to supply light water reactors (LWRs) at fixed prices. Although this daring attempt to secure market share in what both companies believed to be the power producing technology of the future probably produced initial joint losses in the hundreds of millions of dollars, it appeared to confirm the commercial imminence of reactor technology, and more importantly for Westinghouse and General Electric (GE.), established LWRs as the reference technology.[2]

By early 1968, 60,000 electrical megawatts of LWR capacity had been firmly ordered in the United States, with almost 80 percent supplied by Westinghouse and GE. The domestic success of the Westinghouse/GE strategy had an immense impact upon Europe. Both the French and the British programs had come to be based upon a gas-cooled (carbon dioxide) technology. In 1967 in Germany, Siemens and AEG negotiated a license with Westinghouse to build PWRs and opened the European market for water reactors. KWU, the joint venture formed by the two German companies, eventually freed itself from the terms of the American license, under circumstances which are still a source of mutual recrimination. In 1969, after a furious internal debate between the government-owned power producing monopoly, EDF, and the CEA, the French government decided to abandon gas-cooled reactors and develop LWRs. This signalled a startling commercial victory for an American marketing effort; its consequences are apparent in Figure 2.

A nuclear power plant is a complex arrangement of highly technical components—nuclear pressure vessel, pumps, instrumentation, valves, etc.—which are assembled in a massive pre-stressed concrete structure. Only a limited number of firms has been able to develop the capability to build the central piece of equipment of nuclear reactors, the so-called "nuclear steam supply system" (NSSS).

In spite of massive direct and indirect government support, reactor manufacturers themselves have had to invest heavily in R & D and manpower training before becoming capable of selling commercial reactors. General Electric and Westinghouse together have probably spent more than a billion dollars on LWR research, development and training. This "know-how", accumulated over 15 years, turned out to be decisive, however, when serious commercial competition for reactors began by the mid-1960s: in the United States, only two

FIGURE 2.—NUCLEAR PLANTS BUILT OR COMMITTED BY REACTOR TYPE, APRIL 1974 (NON-COMMUNIST COUNTRIES)

1. Fast Reactors	12
2. Heavy Water Moderated Reactors	33
3. Graphite Moderated Reactors	42
4. Light Water Reactors:	
BWR	130
PWR	94
5. Miscellaneous	5
Total	316

SOURCE: *Nuclear Engineering International*, April 1974.

[2]For more detail on these matters, see I.C. Bupp, et al., "The Economics of Nuclear Power," *Technology Review*, January-February 1975. For a comprehensive discussion of the AEC's Cooperative Power Reactor Demonstration Program, see Philip Mullenbach, *Civilian Nuclear Power: Economic Studies and Policy Formation* (NY; The Twentieth Century Fund, 1963).

other firms, Babcock & Wilcox and Combustion Engineering, have been able to capture even a small share of the U.S. reactor market.[3]

Reactors are not only complex, they are also very large. The potential static economies of scale in the reactor business are considerable. In an attempt to realize these economies, the manufacturers more than tripled the size of the plants offered for sale within the space of five years after the first non-turnkey contracts had been negotiated. In many instances, this meant that manufacturers sold components on a "firm price" basis (i.e., payment subject only to monetary escalation) with twice the promised capacity of comparable finished components. The first 1000 MWe plants were ordered before any 800 MWe plants had operated.

A third characteristic of the business is long lead times. It takes a minimum of six years to build a reactor, but because of licensing and other administrative delays, construction in the field may take as long as 10 years. More than 15 years elapse between the extraction of uranium ore from the ground and the moment it is loaded in a reactor. The obvious consequence of such lags is that the period between financial commitment and payoff may be very long relative to the typical financial horizon of most firms. Concurrently, the absolute magnitude of both the commitments is also large. At first approximation, this is a business in which the basic unit of accounting is $100 million.

All of these considerations—high technology products, pervasive economics of scale in manufacturing, high stakes financing with long lags between commitment and payoff—underlie the salient structural characteristic of the international nuclear reactor market: a visible trend toward oligopoly based upon the water reactor technology developed in the United States in the 1950s. Westinghouse is easily the dominant oligopolist.

The differential success of Westinghouse and GE in capturing foreign markets appears to be due to their respective abilities to establish commercial links with indigenous companies. As a direct result of its licensing arrangements, Westinghouse today almost totally controls the Spanish market, the French market through its partially-owned subsidiary, Framatome,[4] and a significant share of the Swedish market. Only in the case of its early license in Germany did the licensee (KWU) manage to develop enough expertise of its own to capitalize upon its arrangement with the parent company to a sufficient extent to successfully market its own product. The only attempt to build LWRs independent of any licensing arrangement with a U.S. parent manufacturer is the case of the Swedish firm ASEA-ATOM. The export prospects for the Swedish varient of boiling water technology do not appear to be bright.[5]

In underdeveloped countries, a variety of political considerations has influenced the nature of the competition among suppliers. If a country wants nuclear reactors for military as well as economic reasons, there is an obvious advantage in purchasing reactors which do not, like American LWRs, require the services of uranium enrichment facilities. This is a strong argument in favor of the Canadian heavy water moderated and natural uranium fueled CANDU system, which is today the only technology capable of seriously challenging LWRs for a significant share of the market in non-supplier nations (i.e., countries with no indigenous manufacturing capability).[6]

Figure 3 summarizes the present partitioning of the world market for water reactors among the chief suppliers. The extent of concentration is self-evident.[7]

The structure of the international reactor fuel cycle market is a more complex matter.[8] The crucial operations are uranium mining, uranium enrichment, and fuel reprocessing. The most significant recent development with respect to the first has been the progressive horizontal integration of several major oil companies—perhaps most notably Exxon—into uranium prospecting and mining. The matter of market concentration aside, this could mean that the commercial interests which control international transactions in a key energy resource may at any given time have far more accurate knowledge about the share of its supply curve than the governments of either consumer or supplier countries. This would be an extremely unfortunate development. As we have already noted, the single most important premise of the American govern-

[3]Several aerospace firms—North American Aircraft, Aerojet General—were early entries in the contest. They quickly fell by the wayside. The still much troubled Gulf-General Atomics began as an effort by General Dynamics to market reactors.

[4]Framatome is a joint venture 45 percent owned by Westinghouse, 55 percent by the French Steel Company, Creusot-Loire.

[5]The degree to which GE has been hampered abroad by its particular LWR technology remains uncertain. Virtually all non-U.S. utilities profess great distrust of boiling water systems which pass radioactive steam through the turbine. There is certainly no decisive evidence from considerable U.S. operating experience that this feature *per se* makes BWRs less safe or less reliable than PWRs.

[6]CANDU systems also have certain technical advantages. They may, for example. be less subject to "loss of coolant" accident, since the cooling water is not contained in one massive pressure vessel.

[7]Gas-cooled reactors are not shown in Figure 3. Thirty-five such units have been sold but neither the British nor the French are now marketing the technology. In the U.S., Gulf-Shell joint venture is still in its prototype development state.

[8]The fuel cycle for enriched uranium fueled LWRs consists of several distinct industrial operations: uranium ore mining and milling, feed preparation, enrichment, fuel rod fabrication, reprocessing and waste storage.

FIGURE 3.—FIRM ORDERS, MAJOR MANUFACTURERS, APRIL 1974

WESTINGHOUSE PWR Licence (US)

Direct Sales	
USA	79
Brazil	1
Italy	2
Japan	4
Korea	1
Spain	7
Sweden	3
	97
Subsidiaries	
France (Framatome)	15
Switzerland (Brown Bovary)	2
Belgium (ACECOWEN,	2
ACSF)	1
Japan (Mitsubishi)	4
TOTAL	121

GENERAL ELECTRIC BWR License (US)

Direct Sales	
USA	65
W Germany	2
India	2
Italy	2
Japan	7
Mexico	2
Netherlands	1
Taiwan	4
Spain	2
Switzerland	2
	89
Subsidiaries	
Italy (AMN)	1
France (CGE)	2
Japan (Toshiba)	4
(Mitashi)	2
TOTAL	98

BABCOCK & WILCOX PWR License (US)

Direct Sales	
USA	24

COMBUSTION ENGINEERING PWR License (US)

Direct Sales	
USA	27

ASEA-ATOM BWR License (Sweden)

Direct Sales	
Sweden	9
Finland	1
TOTAL	10

KWU Licenses (BWR, PWR, PHWR) (Germany)

Direct Sales	
West Germany	18
Netherlands	1
Switzerland	1
Austria	1
Argentina	1
TOTAL	22

ATOMIC ENERGY OF CANADA LDT, CANDU Heavy Water License

Direct Sales	
Canada	13
India	3
Korea	1
Argentina	1
TOTAL	18

ment's power reactor development program has been that uranium is a scarce resource. It has become clear within the past year that, whether or not this ultimately turns out to be the case, it was (and remains) a belief based upon empirical evidence which leaves a great deal to be desired. Yet a number of extraordinarily sensitive nuclear policy questions turn on it. The urgency and magnitude of the need for alternative reactor technologies is but one such issue. Perhaps even more pressing is the economic feasibility of alternative fuel reprocessing and waste disposal strategies. To take an extreme case, a world-wide power industry in which spent fuel is not reprocessed at all but is merely placed in long-term storage has strikingly different implications from one in which uranium and/or plutonium are recycled. There is not now sufficient knowledge about the uranium supply curve to permit a quantitatively robust analysis of this critical question.

For thirty years the high cost and technical complexity of uranium enrichment has been the principal impediment to the proliferation of nuclear weapons potential. Moreover, until quite recently the considerable United States comparative advantage in the business had assured a virtual American monopoly in the provision of commercial enrichment services. The latter situation has already changed, the former may be about to. In Western Europe, both the French and a tripartite organization of British, German, and Dutch interests known as URENCO are already or will soon be in a position to compete with the United States. The Soviet Union has also demonstrated both the desire and the capacity to enter the game. The ultracentrifuge may not represent either the economic or military threat that was once believed. Thus the technological barrier to widespread access to enriched uranium may not yet have been decisively breeched. However, what the future—even the immediate future—holds is unclear due to the absence of public information on laser powered uranium enrichment technology.

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II. NUCLEAR POWER AND NATIONAL ENERGY POLICIES

How does all this come together? First, consider Figure 4. With the exception of Norway and the Netherlands, all Western European countries imported more than 50 percent of their energy requirements in 1972, Japan more than 90 percent of its needs. The pertinent policy makers in most, if not all, of these countries see a growing reliance upon nuclear fission as the only way to significantly modify this situation in the foreseeable future. Among the most informed business and government leaders in all of these countries, there is a profound conviction that for at least the next 20 years, nuclear fission is the only realistic alternative to petroleum for the generation of electricity. This commitment to nuclear power on the part of the political and economic establishment of the industrialized world has persisted, and, if anything, has deepened in the past few years, in spite of the enormous increase in the capital cost component of nuclear power and growing uncertainty about various economic aspects of the heretofore stable fuel cycle component. In most of these countries, reactors are seen as the linchpins of national programs to achieve energy "independence." The irony is that if the nuclear industry does develop on a worldwide basis even loosely in accordance with the plans which have arisen from these commitments, it will represent a major new step toward global interdependence.

Three features of the international power reactor and fuel cycle industries imply new interdependencies. The first of these is the inherently international character of the market for both raw materials (uranium ore and uranium fuel) and final products (nuclear steam supply systems). Second, there is the international character of the debate about reactor safety. Finally, there is the inherent linkage between growing world-wide reliance upon nuclear power and an enhanced potential for nuclear weapons proliferation. Let us examine each of these areas in turn.

As with petroleum, the international reactor market is characterized by "producer" nations and "consumer" nations. Historically, the chief aim of producer nation governments in sponsoring nuclear research and development was to create the indigenous conditions for domestic nuclear independence. This was the policy which motivated the early efforts by the French, the British, and the Canadians to develop a reactor technology which was not tied to the American gaseous diffusion monopoly. It was also the policy which systematically caused efforts at international cooperation in nuclear research and development—most notably EURATOM—to fail.[9] Each of the participating countries was convinced that it had accumulated strategically vital know-how through its national nuclear R & D programs and was reluctant, to say the least, to share this know-how. Little turned out to be worth sharing. With the exception of Canada, government R&D programs aimed at controlling the pace and direction of civilian reactor development did not ultimately influence reality in the way that had been expected for a variety of reasons:

a) The technical alternatives to water cooled and moderated reactors did not interest the private sector (in the U.S. case).

b) The technical options chosen by government ran into unforeseen engineering problems (in the British case).

c) Events in the United States combined with the marketing skills of American-based manufacturers distracted the attention of the customer (in the French case).

d) A potential national manufacturer saw an opportunity to imitate the Americans (in the German case).

Hence government nuclear policy did not have the anticipated impact upon the structure of the commercial market. Indeed, the existing situation is almost the exact opposite of what these policies were designed to create. It is a structure characterized by interdependence rather than independence.

This interdependence is evident in three separate areas. The first is the existence of "off-shore" reactor manufacturing expertise. Spain and Italy illustrate this situation most clearly. Neither has the financial strength to execute a braod nuclear R & D program; therefore they are both entirely dependent upon foreign technical expertise with respect to questions of reactor design and operation. France is in a relatively stronger position in this regard, especially if the breeder program is successful. Nonetheless, for the short run, the Westinghouse subsidiary, Framatome, is completely dependent upon Westinghouse in Pittsburgh for LWR design expertise. The French senior partner, Creusot-Loire, knows nothing about such things. Though it is difficult to judge the real implications of this dependence upon "off shore" know-how, it is plainly inconsistent with the policies of full energy independence upon which much of the Western European nuclear commitment is based. It is perhaps worth noting that in some instances the

[9]A definitive account of these efforts has been published in U.S. Congress, House of Representatives, Committee on Foreign Affairs, Subcommittee on National Security Policy and Scientific Developments: *Commercial Nuclear Power in Europe: The Interaction of American Diplomacy with a New Technology* (December, 1972).

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FIGURE 4.—PERCENTAGE OF INDIGENOUS ENERGY PRODUCTION TO CONSUMPTION IN OECD COUNTRIES IN 1972

	Coal [1]	*Oil* [1]	*Gas* [1]	*Hydro Electricity* [2]	*Nuclear Electicity* [2]	*Total Energy Self-Sufficiency* [3]
Canada	77	115	178	76	3	120
Australia	171	56	100	20	–	108
USA	112	68	97	14	3	86
Norway	36	23	–	107	–	72
Netherlands	63	6	171	–	1	70
UK	98	2	97	2	11	51
Germany	115	7	64	5	3	50
New Zealand	102	3	100	72	–	42
Turkey	100	35	–	29	–	31
Austria	25	25	55	59	–	30
Iceland	–	–	–	96	–	24
France	69	1	54	30	9	23
Greece	85	–	–	20	–	21
Spain	85	–	–	49	7	21
Switzerland	–	–	–	77	14	21
Sweden	–	–	–	75	2	17
Belgium	65	–	–	2	–	16
Portugal	44	–	–	80	–	16
Italy	5	1	93	33	3	15
Japan	32	–	68	20	2	10
Finland	–	–	–	38	–	7
Ireland	8	–	–	10	–	2
Luxembourg	–	–	–	42 [4]	–	2
Denmark	–	–	–	–	–	–

[1] The ratio of indigenous supply of the fuel to total indigenous consumption of the fuel.
[2] The ratio of electricity supplied from the energy source to total electricity consumed:
[3] The ratio of total indigenous supply to total primary energy.
[4] Mainly electricity from pumped storage integrated as peak load generating plant into the international grid.
This table does not include less common sources such as wood or peat which can in some cases make a significant contribution. For example in Finland these two sources provide about 18 percent of total energy consumption.
SOURCE: *Energy Prospects to 1985*, OECD.1974.

interdependencies resulting from the licensing arrangements under which American LWR technology has been exported work in the opposite direction. They have made it possible, for example, for Creusot Loire in France and Breda in Italy, both Westinghouse partners in joint ventures, to export reactor pressure vessels to the United States. The Japanese case is, at least for the time being, similar to the French. Whether and when any or all of these countries will successfully follow the German pattern is still highly indefinite.

The second area of market-related interdependence is uranium enrichment. As we have noted, present trends strongly suggest the development of lively international competition for enrichment services. It is extremely unlikely that the conditions which have historically supported the American monopoly of this business can be re-established, particularly if reactors enter operation on a worldwide basis at anything like the rate foreseen in mid-1974. The strength of the United States in this competition, and hence its power to influence the form which it will take, depends upon resolution of the current debate over the relative future responsibilities of government and industry for expansion and operation of the gaseous diffusion complex. The outcome of this issue is now highly uncertain.

Third, there is the structure of the world market for uranium ore. Given present ignorance about the distribution of uranium deposits, about all that can be said is that the present situation seems to favor five countries: the United States, which has by far the most extensive known deposits in the non-Communist world; Canada; the USSR; South Africa; and Australia. Although the situation could well change, it now appears that several countries placing great reliance upon an expanding nuclear segment in their energy supply systems have no real domestic ore reserves, notably Germany and Japan. Only the United States and Canada (and probably the U.S.S.R.) control sufficient amounts of ore to meet their own needs for the foreseeable future (15–20 years). All of Western Europe and Japan are to one degree or another dependent on foreign ore. From this perspective there would appear to be little choice, in principle, between oil and uranium with respect to considerations of politically motivated and uncontrollable interruptions of fuel supplies. Figures 5a and 5b illustrate the imbalance which presently characterizes the uranium supply and demand picture. But these considerations related to the evolving structure of the world reactor market are only part of the story. The growingly strident debate over the safety of nuclear power

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FIGURE 5A.—MAIN URANIUM PRODUCING REGIONS OF THE WORLD

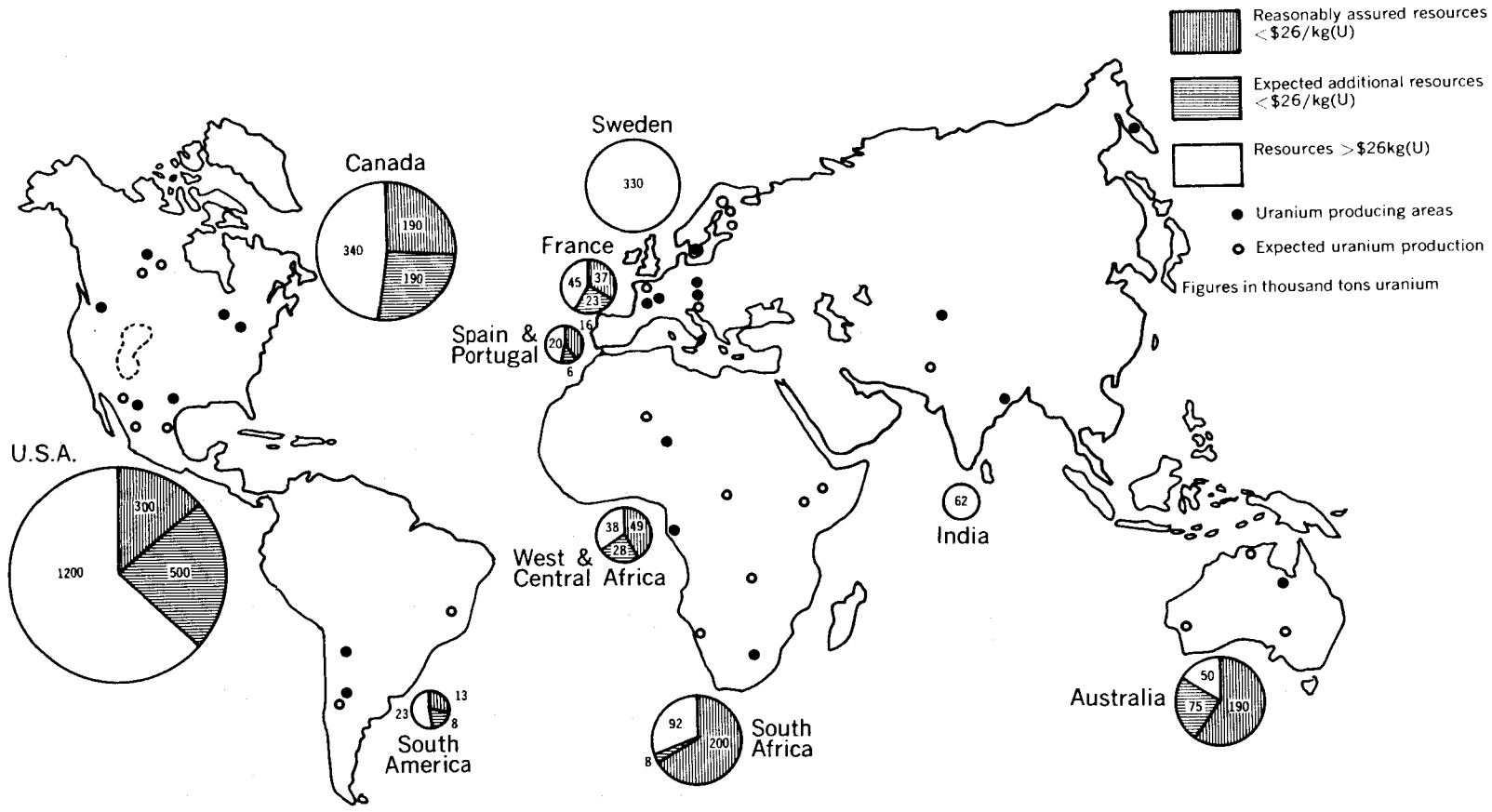

FIGURE 5B.—WORLD URANIUM RESERVES AND DEMAND (10^3 TONS OF URANIUM)

	Total Reserves at less than $26/kg U	*Estimated Additional Reserves at less than $26/kg U*	*Total Reserves at $26/kg U*	*Cumulative Uranium Demand by 1985*
North America (US & Canada)	490,000	690,000	1,180,000	286,000
Europe	61,000	29,000	90,000	227,000
Africa	261,000	39,000	300,000	2,900 ?
Australia and New Zealand	150,000	75,000	225,000	2,000 ?
Asia	3,000	4,000	7,000	83,000
South & Central America	13,000	8,000	21,000	9,500
TOTAL	978,000	845,000	1,822,000	610,400

SOURCE: *Nuclear Engineering International,* February 1975.

is yet another reason why an expanding power reactor industry means enhanced, not lessened energy interdependence.

The international character of the debate of power reactor technology makes it difficult for any one government to ignore for very long foreign safety design criteria. In all of the supplier countries the dispute over reactor safety has become highly politicized. In the United States, for example, opposition to or at least serious reservations about nuclear power is already regarded by many as a litmus test for membership in the liberal wing of the Democratic party. It is by no means unlikely that nuclear safety will be a major issue in future U.S. elections, perhaps even at the presidential level. Hence, the energy policies of other supplier countries may be uncontrollably affected by domestic politics in the United States. They may also be uncontrollably affected by physical events. Safety design standards now vary widely among countries. It is therefore only prudent to expect the chances for accidents also to vary. This is already a source of concern to many industry and government officials in the United States, Europe, and Japan. It is quite clear that any dramatic or dramatizable incident to a reactor, fuel preparation or reprocessing plant, or material in transit within any of these countries would affect reactor operations in all of the others. An accident to a spent fuel cask in Spain could easily shut down all nuclear power in Japan. In these circumstances, energy independence through nuclear power is a very qualified sort of independence at best.

The inherent technical linkage between nuclear electricity and nuclear weapons is the final and least subtle form of global interdependence created by an expanding reactor industry. All uranium fueled reactors produce joint products: electricity and plutonium. As a by-product of uranium fission, plutonium has no intrinsic economic value. Its value results from the fact that it can be used in competition with other fissile material as a reactor fuel. To date, effectively no plutonium has been used as a substitute fuel in commercial LWRs. As we have noted, future developments with respect to plutonium recycle are by no means clear. What is clear is that very significant quantities of the material will be produced in "non-supplier" countries. A recent survey by the IAEA estimates a market potential for some 350 reactors outside Europe, North America, and Japan between 1980 and 1990. (See Figure 6). In operation each of these machines will produce on the order of 200 Kilograms (Kg.) of plutonium per year—enough for perhaps 10 crude explosive devices. It is worth noting that the non-supplier market could well develop even if nuclear power does not come on-stream in the supplier countries themselves at the rate currently anticipated. Indeed, one might even speculate that the "drying up" of one or more major supplier markets would, other things being equal, enhance the export incentives of the affected governments and/or equipment suppliers. There is a bizarre outcome to all of this which is not at all fanciful: increasingly strong competition among reactor supplier companies and/or governments to sell nuclear equipment or services abroad to offset the incremental requirements for imported oil or coal required to meet shortfalls in domestic nuclear capacity caused by the activities of the technology's critics. One of the least troublesome consequences of such a situation would be the possibility for serious divergences of interest between alternative conceptions of national policy and the short and/or long term perceived self-interest of the reactor manufacturers.

In surveying the way nuclear power is now spreading beyond the boundaries of the original supplier countries: there seem to be four main sets of diverging interests. First, there are the governments of the supplier countries themselves. Many of these (Germany and Sweden are, of course, exceptions) initially supported the development of nuclear technology for overtly military reasons. Initial support for various civilian applications of the technology was almost always based upon extraordinarily naive conceptions of the commercial attractiveness of the "peaceful atom." In the aftermath of the 1973 OPEC embargo, the governments of these countries, with the solid support of their business communities, have come to see nuclear power as

FIGURE 6.— MARKET FOR NUCLEAR PLANTS BY SIZE OF UNIT (1981-1990)

Capacity, MW	*150*	*200*	*250*	*300*	*400*	*500*	*600*	*800*	*1000*	*1200*	*1500*	*Total GW*
India								4	6	15		27.2
Spain									5	5	6	20.0
Poland					5			2	1	2		7.0
Brazil								2	2	6		10.8
Czechoslovakia					2		3	1	2	2		7.8
Yugoslavia							2	6	4			10.0
Romania					5		2		2			5.2
Mexico							1	4	6	8	1	20.9
Argentina							2	3	3			6.6
Bulgaria					4		4	2				5.6
Iran							3	4	5			10.0
Taiwan							7	4				7.4
Hungary					6		3					4.2
Venezuela							6	1				4.4
Korea							5	2	4			8.5
Turkey							3	4				5.0
Columbia						1	2					1.7
Greece						4	5					5.0
Pakistan							8					4.8
Egypt							7	1				5.0
Israel					6	3						3.9
Thailand		1		1	1	2	3					3.7
Peru					2	1						1.3
Philippines							2	2	2			4.8
Hong Kong				2	4	2						3.2
Chile				3	2							1.7
Cuba			2	4	1							2.1
Singapore			5		6		1					4.3
Malaysia		3	1	3								1.7
Indonesia		4		3								1.7
Rep. Viet Nam	1	4										1.0
Bangladesh		2	2		2	1	3					4.0
Uruguay	1	2	2									1.1
Kuwait	2	4	1									1.4
Iraq	2	4										1.1
Jamaica	5	2		2								1.7
Ghana	2											0.3
Morocco		2										0.4
Nigeria	2	1										0.5
Algeria	3											0.45
Lebanon	0											0.
Syria	3											0.45
Cameroon	0											0.
Costa Rica	2											0.3
Dominican Rep.	1											0.15
Ecuador	1											0.15
Panama	1											0.15
Albania	1											0.15
Uganda	1											0.15
Tunisia	1											0.15
Bolivia	1											0.15
Zambia	1											0.15
Saudi Arabia	1											0.15
Guatemala	1											0.15
Liberia	1											0.15
El Salvador	1											0.15
Sudan	0											0.
Number of Units	35	29	13	18	46	14	72	42	42	38	7	356
Total Capacity, GW	5.3	5.8	3.3	5.4	18.4	7.0	43.2	34.4	42.0	45.6	10.5	220.0

SOURCE: Market Survey for Nuclear Power in Developing Countries: General Report published September 1973: Update Report published 1974.

Reports available from the International Atomic Energy Agency and its agents.

the most attractive technological fix to dependence upon foreign crude oil. Most have simultaneously reaffirmed their commitment to limiting the proliferation of fissile material. These objectives are in conflict. A world-wide energy supply system based to a significant degree on converting the thermal energy of nuclear fission into useful power inevitably means a world of abundant petroluem. Recent (i.e., mid-1974) estimates of the rate of world-wide reactor construction during the next two-and one-half decades imply the production of roughly one million kg. of plutonium per year by the end of that period, approximately 50 percent of it in non-nuclear weapons countries.

The nuclear industry, for its part, is playing a game with very high stakes. It does not greatly exaggerate matters to say that the continued development of nuclear power is a matter of life or death to a few of the largest multinational enterprises in the world. It is worth remembering that an LWR of the size now being marketed costs the purchaser a minimum of $500 million in today's dollars. The IAEA's forecast of reactor sales to non-supplier countries by 1990 works out to be worth $175 billion. With potential payoffs of this magnitude, competiton for market share could cause the situation to get out of hand very quickly. The positive side of this particular coin is that the nuclear industry as a whole shares the interest of the supplier governments in minimizing the possibilities for illicit use of plutonium.

The non-supplier countries comprise the third set of interests. The magnitude of their incentives to acquire nuclear reactors bears emphasis. In certain cases there may be legitimate economic advantages to nuclear power, especially if the capital costs of the plants can be kept low. But it is surely at least equally as important that reactors, for better or worse, have become the most visible symbol of technical progress and national attainment. Even more than a national airline, ownership of reactors is almost universally seen as the most direct route to stature in the world community. To the degree that power producing reactors also present otherwise unavailable military options, so much the better.

Finally, there is the opposition to nuclear power: individuals and groups of individuals in the United States and abroad whose views on nuclear power range from passionate antipathy through profound distrust to serious concern. The industry both here and abroad has so far generally regarded its critics as irritants at worst, distractions at best. The U.S. situation is typical. The industry is manned by technicians who are thoroughly at home with the potential hazards of the technology, in many instances through years aboard the Navy's submarine fleet. There is essentially no common ground between these people and those convinced that the net social value of nuclear technology is negative. Meanwhile, there is a public at large that was introduced to atomic energy in the form of a mushroom cloud.

The seriousness of this situation should not be underestimated. In all of the supplier countries now counting upon nuclear power as an alternative to fossil fuel, critics of reactor technology have raised some fundamental questions about the consequences of its large scale development. At issue are the hazards to public health and safety caused by the following:

1. the radiation associated with normal operation of the machines;
2. accidents during reactor operation;
3. dangers associated with the fabrication, reprocessing, and storage of nuclear fuel;
4. the implications of abundant plutonium as a by-product of reactor operation.

Each of these is an intricate technical question about which it is virtually impossible to make any substantive statement that will not be disagreeable to someone. Let us, however, at least try to get yet some general sense of the terms of the various debates:

Low Level Radiation

During normal operation all reactors release minute but measurable quantities of certain radioactive material into the environment. Federal standards place stringent limits upon the permissible release of such material and strict procedures have been designed to enforce compliance with these regulations. It has, nonetheless, been claimed that existing standards are too lax.

There is no serious dispute over the fact that normally operating reactors release amounts of additional radioactivity which are very, very small, both absolutely and as a fraction of the radioactivity "normally" present in the environment. Hence, the nuclear industry is roughly correct in asserting that a transcontinental jet flight or a skiing vacation in Aspen exposes one to more radioactivity than would a comparable period in close proximity to a reactor. The problem is that the consequence of even minute additional amounts of exposure to radioactivity in various forms is not known with certainty. Some scientists who appear to have the technical competence to address the question have argued that the available evidence is compatible with the proposition that there is *no lower threshold* beneath which incremental exposure is harmless.

In the United States the overwhelming majority of technically qualified opinion seems to be content with present Federal regulatory statndards. Techni-

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cally informal criticism of nuclear power on the low-level radiation issue appears to be limited to a small number of scientists who disagree with the vast majority of their colleagues. This may be scant comfort, however, since there is ample historical precedent for established scientific doctrine to have been proved wrong by new theory or data. Moreover, resolution of the issue poses severe conceptual as well as practical difficulties.

The conceptual problem is that some versions of the challenge to present standards look as though they require proof of a negative. It is of course logically impossible to prove that there is no lower threshold to radiation danger. But even the apparently more tractable proposition that very low levels of radiation exposure may cause subtle and/or long-term somatic or genetic damage is a methodological and empirical thicket.

Reactor Accidents

Two issues have been furiously debated. What is the probability of an accident to an operating reactor? What would be the consequences of an accident if it did occur? About the only point on which there is agreement is that events are theoretically possible which would produce unpleasant consequences. An analogy with aircraft may be helpful in understanding some of the points which are in dispute. The pilot of an aircraft in flight is required to exercise great care that the airspeed not dip below a certain minimum otherwise the plane will stall. Similarly the operator of a reactor must be certain that the core of the machine is continuously supplied with copius amounts of cooling water. In both cases, complicated systems have been designed—first to prevent the undesirable circumstance from occurring and second to cope with it if it does. In the United States there has been a protracted and on some occasions highly theatrical debate about the reliability of the systems designed to prevent and to cope with "loss of coolant" from a reactor. The debate has been fueled by an almost complete lack of relevant experimental evidence. The industry's critics contend that it is completely irresponsible to continue to allow reactors to operate without experimental resolution of the reliability of various emergency systems.

Better experimental evidence on the reliability of various emergency systems would not however settle the more fundamental question: just how remote is the chance of a nuclear power plant suffering a catastrophic accident and endangering near-by populations? In August, 1974, the results of a two-year, multi-million dollar study sponsored by the AEC were made public.[10] The report relies heavily upon a methodology called "fault-true analysis" developed by the aerospace industry to predict the effects of failures of small components on large, complex systems. Thousands of possible sequences of reactor failures were assessed by computer for their probability and for their effects in terms of radioactivity released to the environment, casualties caused and property damaged.

The new study estimates that the most extreme catastrophe—a loss of coolant plus failure of all backup safety systems, all during the worst possible weather conditions—could lead to some 2,300 fatalities, $6 billion in property damage, and the permanent contamination of 31 square miles of surrounding land. The probability of this particular catastrophe is estimated at 1 in 10^{-7} per reactor operating year.

The basic message of the "Rasmussen Report" is, therefore, that the probability of an accident ot a reactor is considerably smaller than many other man-made and natural risks.

The Nuclear Fuel Cycle

The new AEC assessment of accident risks inherent in commercial power reactors applies only to present designs of light water reactors and not to other elements of the nuclear fuel cycle. A number of activities associated with the fabrication, reprocessing, and disposal of fuel for reactors are inherently hazardous. Curiously, although the actual safety record of certain of these operations is somewhat spotty, in sharp contrast to the safety of operating reactors, these activities have not so far been the source of either broad or particularly intense concern.

It is during the reprocessing stage that chances are by far the greatest of toxic and/or explosively fissionable material being "diverted" either accidentally or by design. Though there has been considerable experience both in the United States and abroad with the technology (a complicated sequence of mechanical and chemical operations) of reactor fuel reprocessing, this experience has not been altogether reassuring. Several instances of lost material have been reported, and the safety record compiled by the three commercial reprocessors in the United States (none now has an operating plant) has been severely criticized by the AEC itself. The industry's critics claim that this record demonstrates that the technology is not yet in hand.

[10] *An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants*, WASH-1400, (US A.E.C., August, 1974). For opposition viewpoint see: Daniel Ford and Henry W. Kendall, *An Assessment of the ECCS Rulemaking Hearings* (Friends of the Earth, Inc., 1974) and Daniel Ford, et al., *The Nuclear Fuel Cycle* (Union of Concerned Scientists, Cambridge, Massachusetts, 1974)

One matter which the nuclear industry, its critics, and the government do agree upon is that no acceptable technology to dispose of the waste products of the nuclear fuel cycle yet exists. Indeed the failure to aggressively pursue development of a waste disposal technology during the pre-commercial nuclear era has been a source of admitted embarrassment to the AEC. Within the industry and the AEC, debate is currently focused upon the relative advantages of two alternative waste disposal strategies. One would involve storing the waste material in closely guarded surface buildings which had been designed to withstand natural disasters. The alternative is to put the material in some inaccessible place and seal it forever as well as possible. The two strategies are characterized by contrasting trade-offs. The first retains options and provides more safety against miscalculation, but it does so at a high cost of administrative responsibility. (Some of the waste material remains hazardous for thousands of years.) The second guards against irresponsible human behavior at a cost of increased environmental risk. One stresses retrievability, the other is designed as quite the opposite of it.[11]

By-Product Plutonium

Plutonium is one of the most potent carcinogens known, at least in animals. Experiments have shown microgram (10^{-6} gram) amounts to be reliably fatal to test animals when ingested into lung tissue in soluble form. There appears to be no comparable human data. No known human malignancy has been directly connected with plutonium inhalation. Of equal or greater concern is the fact that by-product plutonium in contrast with the "partially enriched" uranium burned in light water reactors, is an acceptable if not optimal material for the fabrication of nuclear explosives. Depending upon the skill and/or luck of the designer, 5–20 kilograms are all that is needed for a crude explosive with sufficient power to, say, pulverize the World Trade Center.[12]

The critics of the nuclear industry have argued that it is virtual madness to suppose that a technology based upon this ghastly material can be a long-term solution to any significant fraction of the world's energy needs. It is the candid view of some of the industry's most informed observers that this argument will eventually prove to be the most politically damaging challenge to the acceptability of reactor technology.

There is accumulating evidence that in the United States the principle cause of the continuing misestimates of the capital cost of nuclear plants has been the nuclear safety controversy. If this interpretation is correct—if present trends continue or accelerate—the nuclear option for the United States could be compromised for the foreseeable future. This will happen because there is some absolute capital cost at which nuclear plants are too expensive compared to other alternatives for supplying or conserving energy. Exactly what this cost will turn out to be is still indeterminate because an economic comparison of nuclear and coal plants is subject to uncertainty on both sides. The future capital costs of large coal-fired plants is also highly speculative. The one things which is clear—that the trend is unmistakably up in both cases (in constant dollars)—is of little comfort to anyone except OPEC.

In the United States, the existing interests and institutions appear to be lurching toward an outcome—probably to be precipitated by crisis—the costs of which will bear no relation to the costs of some rational assessment of the pertinent U.S. energy supply and demand constraints.

In Sweden, on the other hand, the issue has been the subject of a formal parliamentary debate. France appears to be moving in the same direction only one year after EDF, the government-owned power production monopoly, made a major commitment to expand its nuclear generating capacity and the central electricity production planning committee had decided that nuclear power was the only rational source of incremental generating capacity for the next 15 years.

Hence, the U.S. situation is to a surprising degree repeated throughout the industrialized world. A "great debate" on the value of nuclear power and, therefore, on its place in national energy supply systems, is under way in the industrialized world. It is extremely difficult to have a confident sense of the outcome of this debate, for there are a variety of key factors about which we now have very little information:

- *Technological factors:* Is the state of the art in terms of nuclear safety different in Sweden than it is in the United States? To what extent do possible variations in reactor safeguards make a difference in the nuclear debate? Are there technological "fixes" (e.g., proscribing Plutonium recycle) which could decisively influence the outcome of the debate? If so, are the costs of such fixes tolerable?

[11]For more detail on this see "On Disposal of Nuclear Wastes," unpublished manuscript, Arthus S. Kubo and David J. Rose. Dr. Kubo is a major in the U.S. Army Corps of Engineers, presently stationed at the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas. Dr. Rose is a Professor of the Nuclear Engineering Department, Massachusetts Institute of Technology.

[12]See Theodore B. Taylor and Mason Willrich, *Nuclear Theft: Risks and Safeguards* (Cambridge, MA: Ballinger Press, 1975).

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- *Organizational factors:* Is EDF, the French publicly owned electricity monopoly, in a better position than any American utility to impose its views on nuclear development?
- *Administrative factors:* To what extent has the U.S. licensing procedure helped opponents in establishing their views? Is there an administrative "fix" to the problem? What, for instance, would be the consequences of either sharply limiting or sharply expanding the rights and resources of intervenors?
- *Institutional factors:* To what extent has a decentralized decision-making pattern (like the American or German) influenced the nuclear debate in a different way than a centralized planning system (like the French or Swedish)?

With respect to U.S. institutions, it is pertinent to ask whether the problem arises from the characteristics of the nuclear safety issue itself, the characteristics of the American private and public institutions which must deal with it, or both.

Consider first the nuclear safety issue. Has the controversy reached a stage such that there is no "solution" which the relatively aggrieved party would tolerate? Will the critics of nuclear technology accept any role for it in the national energy supply system? If so, are the conditions of such acceptance tolerable by the industry and its customers? With respect to the institutions which must deal with this issue, the crucial question is whether, taken as a whole, existing public and private institutions have the necessary authority and power to produce an acceptable solution short of crisis. Note that both questions are fundamentally political rather than economic. To oversimplify, four general situations are possible as suggested by the following table:

TABLE 1.—FOUR POTENTIAL SITUATIONS: NUCLEAR SAFETY ISSUE

		Negotiable	*Non-negotiable*
Institutions	Capable in their present form	A optimistic decentralized scenario	B pessimistic decentralized scenario
	Incapable in their present form	C optimistic central planning scenario	D pessimistic central planning scenario

Consider first cell A. There may be grounds for compromise which the existing public and private sector institutions are in principle capable of working out under certain conditions, e.g., better information, more technical competence, and minor clarifications of authority. Second, there may be no great problem with our institutions, but the issue itself may be fundamentally intractable. Passions may be so high, commitments so deep, and misunderstandings so pervasive that no realistically conceivable set of institutions could now avert a major crisis of some sort. (Chronic electricity shortages, great price increases, a nuclear accident, or all of the above.) Conversely, the issue itself may not be as difficult as it looks, if only we could fundamentally modify the institutions dealing with it (cell C). The argument here would be that the decentralized, constituency-oriented decision-making pattern which characterizes American institutions is fundamentally incapable of working out a compromise solution, even though one is perfectly reasonable. Thus, Cell C might be termed the "optimistic central planning" position. Finally, the situation may be hopeless on both counts. If this gloomy case is in prospect, it would be at least instructive to understand why in order, hopefully, to avoid similar disasters with future problems of this type. Was the nuclear safety controversy inherently intractable, and our institutions inherently inappropriate or did we cause one or the other to become so by avoidable errors of omission or commission?

There are a number of reasons to believe that in the United States this is precisely what we did. The entire institutional apparatus put in place in the aftermath of World War II to control and manage nuclear energy appears to have been a failure. At least some of the reasons are clear. A principle was that for the initial 17 years of its life, the U.S. Atomic Energy Commission was essentially a dual mission agency, neither of its twin priorities had very much to do with the real social issues posed by a nuclear power reactor industry. In the immediate post-war years, the Commission's preeminent mandate was, of course, secrecy. The legacy of the behavioral patterns which resulted requires little comments. A less widely recognized fact about the AEC, however, had an equally profound effect upon the

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way the agency defined its responsibilities with respect to commercial reactor technology. From 1947 to 1964 the production of weapons-grade uranium and plutonium known collectively as "special nuclear material" (SNM) dominated the AEC in a variety of subtle ways. First, of all AEC programs, this was the only one where the commission's own employees—as distinct from contractor personnel—monopolized the pertinent technical and managerial expertise. Consequently, the principal path for career advancement within the agency during its period of expansion was the SNM production program. By the early 1960s virtually all of the senior line officials in the AEC (including both the General Manager and the Director of Reactor Development) had advanced through this program. The priorities and operating assumptions which guided the production of SNM carried directly over into the power reactor program. The most important of these was the postulate that fissile material is a scarce and expensive commodity to be used with maximum efficiency. It follows that the locus of government responsibility with respect to commercialization of a technology which will be a prodigious consumer of this precious item is to assure that it is consumed efficiently. The water-moderated reactors upon which Westinghouse and GE chose to base their commercial gamble do not do so. Hence, in the critical debate, 1955 to 1965, the AEC's program consisted almost exclusively of support for alternative reactor technologies whose chief difference was the efficiency with which they burned fissile fuel. This obsession with a single parameter of a complex economic and technological system (strikingly equivalent to basing an air transport R & D program upon increasing the cruise speed of aircraft) reached its apotheosis in the late 1960s with the elevation of the breeder program to the highest priority nuclear power R & D program at just the time when the LWR commercial market was taking on a life of its own.

The federal nuclear establishment failed in other ways. Considerable evidence has accumulated that the regulation of business activities is one of the most inherently difficult things modern government is asked to do. Even in an ideal world of universally accepted objectives, unambiguous standards, and unlimited resources, regulation would remain an intrinsically subtle and complex process. Practical reality, of course, rarely approached these ideals. For the U.S. Atomic Energy Regulatory Program the discrepancy has been persistently wide and was especially so as the 1970s began. The takeoff of the commercial power reactor business in the United States in the late 1960s found the American AEC with a regulatory apparatus which was a stepchild of the agency's real priorities. The nuclear regulatory program of the early 1970s was characterized by severely constrained technical and administrative resources, a legacy of indifferent internal management, and only sporadic attention by the Chairman and Commissioners of the agency—who had a $2.5 billion R & D program to manage—and a complicated network of tacit agreements and informal treaties at the operating level. The effect of these factors was to obscure lines of responsibility and communication. Because the system was so uncodified and because meaningful accountability had been so attenuated, the program's senior managers had no reliable way of monitoring performance to identify the source of recurrent bottlenecks and breakdowns. In the spring of 1972 a new AEC Chairman, James R. Schlesinger, recognized the government's nuclear regulatory program was in desperate need of thorough reorganization and procedural reform.

The actions he subsequently authorized were based upon the insight that ideally the program should consist of several conceptually distinct functions: (a) the establishment of radiation safety and nuclear materials security standards; (b) the licensing of specific facilities or operations in accordance with these standards; (c) the inspection of licensed operations to assure compliance with license stipulations.

This tripartite distinction is helpful in illuminating the reasons for the continued failure of the U.S. governmental nuclear power regulatory process as well as the somewhat different problems that regulation of a worldwide industry implies.

Part of the trouble has doubtless been due to constraints upon technical and administrative resources. But the basic problem is far more fundamental. The AEC, no less than its counterparts in other supplier countries, has consistently approached the standard setting problem on the assumption that it is basically a technical issue. Consider the relatively noncontroversial area of radiation protection standards (which are the basis for important reactor design specifications). The International Commission on Radiation Protection (ICRP) was originally established in 1928 as the International X-Ray and Radiation Protection Commission. It is a private association of scientific experts elected by their peers. Its members in principle are independent of any political and commercial interest. Periodically, the ICRP issues recommendations regarding maximum permissible doses of ionizing radiation. Though the ICRP has no power independently to implement these recommendations, the ICRP dosage norms are, in practice, taken into account in the actions of the pertinent regulatory bodies in all OECD countries. In the United States, for example, the National Council on Radiation Protection and Measurement works closely with the ICRP in developing standards of radiation protection. As in all OECD countries there is an elaborate institutional mechanism

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in the United States to guarantee that the public health and safety are protected from the harmful effects of ionizing radiation. Indeed, the governments of all the Western countries and Japan, and one assumes, those of the Communist countries to no less extent, appear on paper to have taken very seriously their responsibility to protect the public from nuclear hazards.[13]

The persistence of the controversy over radiation protection standards here and abroad is not primarily due to the lack of institutional machinery. Nor is it due to lack of technical expertise. It is due to lack of legitimacy. For the basic question at issue is not technical at all, it is political. What is at issue here and in other aspects of the larger nuclear safety controversy is the question: How safe is safe enough? Until the political process produces an answer which the relatively aggrieved party is willing to accept, organizational reform and/or the allocation of additional financial, technical or administrative resources to specific engineering, physical, or biological questions, is beside the point.

It unfortunately appears to be the case that the only process likely to produce a legitimate answer is also just the process which in the short run will exacerbate the difficulties of accelerating the introduction of nuclear power into the energy supply system of the supplier countries: a full-fledged public debate of all the issues. If there is to be any hope, ever, of substituting nuclear power for fossil fuels in the Western democracies, it is important to be clear that there just is no choice about this. In a democracy, policy questions of this sort cannot be left to private commercial intersts, technical experts, and a closed circle of government officials. In order to gain legitimacy, they must be thrown up for public debate and education. The key political feature of the nuclear safety debate is that one side has no positive support for its position beyond a tiny circle of self-interested experts. Those who question whether reactor technology has any positive real social value can on the other hand tap a diffuse, unfocused, and vague concern among a variety of groups. The nuclear industry and the government officials who hold different views apparently have no such constituency. There is no visible base of public support for a nuclear program of the magnitude proposed by all recent national energy policy statements here and in other supplier countries. It is our view that without such a base of positive support these programs are hopelessly unrealistic.

The "reactor licensing problem" is therefore not a licensing problem at all, it is a standards problem. In the United States we have followed the typical pattern of delegating to an administrative agency a task with which it is inherently incapable of dealing. In the face of the controversy over "how safe is safe enough?," the licensing authorities have quite naturally protected themselves by continually revising design specifications and criteria in response to shifting views about acceptable levels of protection. There is one point about which the AEC regulatory officials have always been clear: were there an accident, they, not the manufacturers or the utilities, would be blamed. They are quite correct.

This is why the industry is so badly mistaken in believing that licensing related cost increases and delays must diminish in the near future. So long as the basic controversy over how safe is safe enough persists, they cannot diminish. The difference between issuing a reactor operating license and a motor vehicle operating license is instructive. The latter proceeds expeditiously because the licensing agent knows that setting the standards and enforcing compliance are both the responsibility of some other agent. So long as the applicant passes a noncontroversial test, it is not the licensor's problem if some third party is injured either because the test was based upon inadequate and/or inappropriate standards or because the licensee did not comply with the conditions of his franchise. It is precisely this difference between the licensing of motor vehicle operators and a nuclear reactor which is the fundamental cause of the growing economic problems of the nuclear industry in the supplier countries. The licensing agents are held accountable for the adequacy of standards which they do not have the authority to establish. The recent dissolution of the AEC, the creation of the Nuclear Regulatory Commission (NRC) and the absorption of nuclear R & D into an agency with a broader technical mandate has very little effect on the basic problem and is only tenuous relevant to its resolution.

With respect to the nonsupplier countries, the critical problem is enforcement: i.e., the police rather than standard-setting function. It is perhaps worth underlining the key analytic point: just as standard setting is inherently a political activity, enforcement is inherently a police activity.

With supplier countries this poses no fundamental question. For one thing there is a clear convergence of interest between the government of a supplier country and the conditions of international nuclear materials control as it relates to enforcement activities within that country's borders. The locus of responsibility is unambiguous. It is clearly the responsibility of each supplier government to enforce compliance with the terms of licenses upon the companies which manufacture and operate nuclear facilities.

This is, of course, far less clear with respect to control within importing countries. There are a number of questions, practical and theoretical,

[13]These institutional arrangements are described in great detail in Nuclear Legislation: Regulations Governing Nuclear Installations and Radiation Protection, OECD, Paris, 1972.

about where the locus of responsibility should lie. One approach is enforcement by an international civil service—I.A.E.A. "safeguards" or some equivalent. The alternative is control by agents of a supplier country. Note that in the latter case there is again a convergence between the minimum requirements of international control of fissile material and the interests of the agent enforcing that control.

The difficulties of bilateral safeguards arrangements stem from the complex relationship between supplier countries and the reactor manufacturing and fuel-cycle industries. To the degree that the government of a supplier country and a given manufacturer see themselves in partnership, the temptation to compete with other partnerships to the detriment of international nuclear materials control is obviously enhanced. The history of the relationships between the oil companies and Western governments is hardly encouraging in this respect. The contrary possibility is perhaps even less encouraging. An adversary relationship between supplier country governments and the industry implies strong temptations for the industry to compete for market share in ways which weaken international fissile material control.

What all this strongly suggests is that no meaningful international control is plausible without agreements which establish some basic terms of reference among the governments of the supplier nations. Unless these governments can present a united front to the companies on the one hand and the importing countries on the other, fissile material will inexorably spread across the planet in the most ominous way imaginable. Negotiations among the highest political authorities of the supplier countries aimed at a definition of permissible terms of international reactor competition is at least as urgent an item on the world diplomatic agenda as continuation of the SALT negotiations to control strategic nuclear weapons competition. More precisely: at a minimum, a U.S./French accord on these issues is an absolutely necessary (though not sufficient) condition to avoid a situation as ruinous to international security as an unrestrained U.S.-U.S.S.R. strategic arms race.

To get some sense of just how bad things could get, let us briefly consider a pessimistic though by no means fanciful scenario.

First, assume there is continuing disagreement both within supplier countries and on an international basis about safety-related standards. In these conditions, the licensing apparatus of all countries will continue to be vulnerable to shifting political pressures. This means that whether reactors can be built at a cost that will make them economically attractive will be controlled by the politics of the reactor safety controversy.

This scenario also assumes that no progress is made in the international control of fissile material. Within this loose or nonexistent framework of control, strong incentives exist for nonsupplier countries to purchase reactors for non-economic reasons. The reactor manufacturers would continue to have strong incentives to market their product to non-supplier countries. Indeed, the incentives to do so are stronger than they would be in the context of some international consensus about the various safety issues.

If this situation develops, it means that plutonium will become available in a large number of countries without any strict control mechanisms. In these circumstances, two things are almost certain. First, countries possessing even minute quantities of plutonium would have strong disincentives for agreeing to any workable international control mechanism. Second, the chances of a heroin-like black market for the commodity are high. Any attempt to control the situation under these circumstances would present problems equivalent to those of controlling heroin in today's environment. Any international authority trying to control fissile material under these conditions without any access to the source of the material would have difficulties equivalent to those of INTERPOL trying to control international traffic of heroin without access to the production facilities.

To summarize this pessimistic scenario: within supplier countries, continuing and perhaps intensifying controversy about reactor safety may sharply limit the growth of the industry. Meanwhile, the stakes of the supplying companies correspondingly increase in the face of catastrophic financial losses. This interacts with the strong non-economic incentives of importing countries to purchase reactors for military or political reasons. The outcome is competition among multinational supplying companies for a market share in underdeveloped countries under circumstances that maximize the chances for nuclear weapons proliferation and/or nuclear accident.

It is our view that present trends make this outcome highly probable. In fact, unless the matters we have reviewed receive the urgent attention of the principal political authorities in the supplier countries, they are all but certain.

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United States Policymaking for Satellite Communications

Abram Chayes
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Satellite communication was the first and remains by far the most substantial commercial application of space technology. Intensive research and development (R&D) began in the wake of Sputnik and culminated in 1962 with the first transatlantic television transmissions via AT&T's Telstar satellite. Three years later, Early Bird, the first operational communications satellite went up over the North Atlantic. With over 100 voice channels, it substantially doubled the telecommunications capacity then provided by submarine cable between the United States and Europe.

Today, three hardware generations later, Intelsat IV's, in place over the Atlantic, Pacific, and Indian Oceans, provide a global satellite communications network. Two operational satellites provide around 3,000 channels from the United States across the Atlantic. That amounts to about two-thirds of the available capacity which itself has grown by a factor of more than ten in less than a decade. About 50 percent of North Atlantic traffic now goes by satellite. In the Pacific and Indian Ocean basins, where conditions for cables are more difficult, the dominance of satellites is even more marked.

Like all United States space activities, satellite communication has, from the beginning, been heavily colored by international politics. From the outset, it was seen as an important vehicle for recouping United States scientific and technological prestige after Sputnik. Therefore, policy pronouncements gave heavy emphasis to the goal of an operationally effective system that would demonstrate United States leadership and technical competence. At the same time, in the U.N. and elsewhere, United States spokesmen stressed the importance of satellite communication for international cooperation, the possibilities offered for educational and cultural exchange among nations, and its potential contribution to economic development. These two policy themes were not wholly consistent. They were not fully reconciled from the beginning and the clash between them has been a persistent feature of United States satellite communications policy.

INTERDEPENDENCIES

Earth stations and space segment

Aside from political characterization, satellite communication illustrates a variety of modes of technical interdependence. In the most elementary sense, communication cannot take place at all unless there is someone at the other end of the line. Existing space systems require elaborate earth stations—capital cost in the neighborhood of $5 million—to transmit and receive signals through the satellite. The earth-stations must meet fairly extensive specifications to be compatible with the system. Moreover, there is a basic trade-off between earth-station and space segment costs. In general, the more powerful and elaborate the satellite, the less sensitive and sophisticated the earth station needs to be. And, although the cost of each individual earth station is relatively small, it is expected that there will be in the range of 100 earth stations in the Intelsat system within the next few years, representing a combined investment in the neighborhood of $.5 billion, almost twice as large as in the space segment.

There is a more subtle relationship between listener and sender. In general, the value of a communications network to the user is a function of how many receivers he can reach. Although, for Americans, the transatlantic link to London may be the most important, the value of the system is enhanced to the extent it can reach other points in Europe and beyond. Unlike the cable, which is essentially a linear, point-to-point transmission mode, the satellite permits the sender to reach any point in a wide area (as much as 1/3 of the earth's

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surface) irradiated by the satellite, so long as that point has access to earth station facilities. Moreover, whereas for the cable, the costs of the link are roughly proportionate to the distance, for the satellite, the point-to-point distance between sender and receiver on the earth's surface does not affect costs. These features press toward extensive membership in the network, and the Intelsat system now has more than 80 members.

On the other hand, the capacity of the satellite is degraded in proportion to the number of earth stations that use it. For example, in Intelsat IV, a single transponder can produce 900-voice channels between a single pair of earth stations. But if 14 earth stations share the same transponder the usable capacity drops to 336 channels. There is thus a trade off between access and capacity, and a limit must be set to the number of earth stations that can use the same transponder. That limit has the effect of prescribing the minimum number of channels the participant must lease in order to participate in the system. For instance, if the limit is 14 users producing 336 channels, then each of the 14 must lease at least 24 channels (the existing Intelsat requirement), which is well in excess of the international telecommunications needs of many developing countries. The cost per message obviously increases to the extent that the participant must pay for unneeded channels. These rigidities are being modified by technical advance, but they continue to create issues for decision carrying political as well as technical overtones.

Frequencies and orbits

A second range of interdependencies in satellite communications activities relates to the use of what are increasingly regarded as international resources: the electromagnetic frequency spectrum and the geostationary orbit.

Satellite communication is a form of radio transmission. Signals are transmitted from the earth station to the satellite, where they are picked up, amplified and retransmitted to the receiving earth station. The signal is carried on a electromagnetic "wave," which is distinguished by the frequency of its oscillation. Two transmitters can send messages simultaneously on waves of different frequencies over the same geographic space without interference; but if both use the same frequency, the signals will interfere with each other so that neither can be heard. Thus, there is need for some authoritative method for allocating frequencies to particular transmitters, a function performed, as we shall see, by the International Telecommunications Union (ITU) on the international plane, and the Federal Communications Commission (FCC) at home.

As to orbits, most existing communications satellites are of the "synchronous" type,[1] and it seems likely that this type will continue to dominate for some time to come. A synchronous satellite travels in an orbit over the equator at an altitude of about 22,000 miles. In this position, its orbital speed is the same as the earth rotating on its axis. Thus to an observer on the earth, the satellite appears to remain stationary in the heavens. The orbit 22,000 miles above the equator is called the synchronous or geostationary orbit. A single satellite in this orbit illuminates about one-third of the earth's surface except for the polar and subpolar regions. Three satellites, properly placed, give global coverage.

Both the frequency spectrum and the geostationary orbit are said to be limited resources. In order that transmissions can be distinguished by their frequencies, they must be spaced along the spectrum. Only certain ranges of the spectrum can be used with present technology, and a great portion of these are already in use for terrestrial radio communications: radio and television broadcasting, micro-wave relay, air and maritime navigation and traffic control, and the like. Other portions of the spectrum have unfavorable characteristics for radio transmissions: for example, the waves at certain extremely high frequencies are, like light, dispersed by fog or rain. Technology presses at these limits expanding the usable spectrum into even higher frequencies and finding ways to use more intensively the familiar areas of the spectrum. But the limits remain, in principle, and they are given some rigidity by existing capital investment, operating methods, regulatory patterns and the like.

As to the orbit, a minimum spacing between satellites is necessary, with present control techniques, to keep them from colliding. But this is a small distance, a matter of a few miles, and if this were the only constraint the orbit could accommodate a number of satellites far in excess of any conceivable need.

A more significant problem is avoiding radio interference between two satellites. At one time, it was thought that two satellites transmitting on the same frequency would have to be separated by 5 degrees on the orbital arc. This was quickly translated into the notion that there were only 360/5 = 72 orbital "slots" or "parking spaces" in the geostationary orbit, many of which (*e.g.*, those over the Pacific) were of very little interest for communications purposes. Thus the specter was raised of a severely limited resource, readily subject to preemption by the two technologically capable powers in a field marked by a strong tradition of

[1]The Soviet Molniya system is of the alternative "random orbit" type, in part because of the large area of the USSR in arctic and subarctic regions where synchronous satellites cannot reach. The Soviet Union has announced plans to launch two synchronous satellites.

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"first-in-time, first-in-right." (The lawyer's version of first come, first served.)

United States experts contend that if spectrum and orbit use are sensibly planned and managed, there will be no shortages. But the argument is either not well understood or not regarded as credible in the circles and institutions where decisions on regulation of these resources are likely to be made. Thus, most other countries seem to look towards some kind of division or allotment of a fixed number of parking spaces to each nation to avoid preemption. According to United States experts, if such a division of the pie occurred, it would result in much less than full use of the resource.

Presently planned satellites, even on a generous estimate, are probably not numerous enough to put serious pressure on the capacity of the orbit, whatever allocation approach is taken. But the pattern of use after a decade or so is quite uncertain; and the possibility of being frozen out is perceived as very real by persons outside the United States bearing responsibilities in this field.

THE ACTORS (AND THE PLAY)

United States and international foreign participants in the policy-making process can best be identified in the course of a short review of the history of satellite communications.

Domestic legislation

Until 1962, AT&T seemed to have a commanding lead in the field, and its experimental satellite, Telstar, was the vehicle for the first successful transatlantic satellite transmissions. AT&T is primarily a domestic telecommunications carrier, a multibillion dollar corporation, one of the largest in the world. In the 1950's it had developed the first submarine telephone cable. The cable was an immense improvement over transoceanic voice transmission modes then available, and AT&T moved rapidly into a position of dominance in United States international telecommunications. In so doing, it put severe competitive pressure on the carriers already in the market using traditional transmission modes—submarine telegraph cable and high frequency radio. These carriers, ITT, RCA and WUI, the so-called "record" carriers, might well have been driven to the wall, and in the early 1960's, before the advent of operational satellites, the Federal Communications Commission (FCC) was already taking steps to protect them against the impact of AT&T's competition.

In the legislative battles leading up to the Communications Satellite Act of 1962, however, all the carriers took a common position. A committee of carriers convened by the FCC recommended that the United States communications satellite should be owned by a consortium of carriers, following a pattern that was developing in the cable field. The FCC endorsed this position.

Studies of future satellite communications policy had begun within the executive branch during the Eisenhower administration, under the leadership of the Space Council. These were accelerated after the inauguration of President Kennedy and led to a presidential statement of policy in July 1961. Although it was not unmistakably clear that legislation was necessary to facilitate further work in the field, the desiderata of prestige and visibility made it a foregone conclusion that the policy studies would call for the enactment of a legislative framework. The serious issue was whether United States participation in satellite communications should be by way of private enterprise or through public ownership, perhaps on the model of the TVA. Kennedy's decision was for private ownership under adequate public regulation, with the proviso that antitrust policies must not be compromised. Of the agencies participating in the study, only the State Department vigorously supported public ownership (NASA was acquiescent), a fact that seriously damaged the Department's credibility and influence with congressional leaders (particularly Senator Kerr, chairman of the Committee on Aeronautical and Space Sciences) and with the corporation ultimately formed under the legislation.

The Communications Satellite Act was passed after a bruising legislative battle against a liberal filibuster in support of public ownership. It was a compromise between the carrier's proposal and the administration bill calling for an ordinary private corporation. The Communications Satellite Corporation (Comsat) to be formed under the bill was a hybrid. Half of its shares were to be sold to the general public, who would elect six directors; the other half, also controlling six directors, was to be owned by the international telecommunications carriers.[2] Three directors were to be appointed by the President, subject to Senate confirmation. The corporation was to be a chosen instrument of the United States participation in the global satellite communications network. The FCC was to have regulatory jurisdiction over facilities, finances, and rates. NASA was to provide technical advice and launch services on a reimbursable basis. The President was empowered to

"Exercise such supervision over relationships of the corporation with foreign governments or en-

[2]Although the carriers initially took up their full quota of shares and representation on the board, by the end of the decade most of them had sold off the shares and there were no longer any carrier directors.

tities or with international bodies as may be appropriate to assure that such relationships shall be consistent with the national interest and foreign policy of the United States."

International arrangements

With the passage of the legislation and the organization of the corporation, the next phase, the negotiation of international arrangements began. The first steps were taken by Comsat management, Chairman of the Board, Leo Welch, a former Standard Oil of New Jersey executive and President Joseph Charyk, formerly Under Secretary of the Air Force. The conception they held of the international structure was closely modelled after the cable arrangements. There would be a web of bilateral agreements with foreign telecommunications authorities in the first instance with those of France, Germany, and the United Kingdom. These countries were the principal markets, and each had constructed or contracted for an earth station during the experimental period. What the corporation wanted were essentially commercial agreements to lease a certain number of channels in the satellite, to be owned jointly, if necessary, by the participating entities in proportion to the channels used. The European participants would be responsible for gathering and distributing messages for European countries with earth stations.

Although these arrangements were not without appeal to the European telecommunications authorities, European governments and foreign offices were by no means content to leave their first participation in a space venture in the hands of technicians. A European Committee on Space Communications of about 20 countries was formed (technically an offshoot of the European Committee on Post and Telecommunications (CEPT)) with both technical and political representation. It quickly constructed a united front for negotiations with Comsat. The basic demand of the Europeans was that the satellite system should be owned and operated by a more-or-less traditional international organization in which all users of the system would be members. A bridge between Comsat and the Europeans was provided by Canada, Japan and Australia, who soon entered the negotiations.

United States government participation in the negotiations was complex and wavering. The State Department opposed the original Comsat proposals and predicted that they would be unacceptable to the Europeans. The correctness of the forecast did nothing to erase a Comsat suspicion that State had stimulated, or at least alerted, the Europeans. This still further weakened State's leverage with Comsat. To provide stronger governmental guidance, an ad hoc committee was convened under the co-chairmanship of the Science Advisor and the Deputy Attorney General (the principal draftsman of the Comsat Act) with representation from State, Defense, FCC, NASA, the Space Council, Office of Telecommunications Management, when it was formed, and other interested agencies. Even within State there was something of a struggle for leadership among IO, the Bureau of Economic Affairs, and the Office of Legal Adviser. The ad hoc committee was successful in hammering out a unified government position, under the twin constraints that it was unable to engage the interest, much less the commitment of any senior officials, and that Comsat was very well endowed on Capitol Hill.

Of the agencies represented, State would have gone the farthest in the direction of the European demand for an international organization. But even State maintained that Comsat was entitled to a dominant voice in the organization, not only in recognition of the contribution of the United States, but also to enhance the chances of operational success and to insure that the enterprise was identified with the United States space program.

State, with the backing of the ad hoc committee, was able to negotiate with Comsat, a three-part proposal for presentation to potential foreign participants. *First,* the system would be owned and operated by an international consortium of telecommunications agencies. *Second,* ownership and voting power were to be proportionate to capital contribution to the enterprise, and this in turn would be roughly proportionate to use, a formula that would give Comsat a substantial majority of the vote. *Third,* Comsat would be manager of the system under contract to the consortium. As manager, it would have day-to-day operating control of the system, the managerial initiative, and responsibility for formulating proposals for consortium action.

These proposals were presented to the Europeans in Rome in February 1964 by a United States delegation made up of Comsat, State Department, and FCC officials. The response was relatively favorable, and with one major addition, the United States proposal formed the basis for the agreements which were signed the following August, establishing Intelsat, the international telecommunications satellite consortium.

The single major condition imposed by the Europeans for acquiescing in a set-up completely dominated in practice by Comsat was that the arrangement should be of limited duration. The agreements contained a stipulation for *de novo* review of the situation after five years. Comsat submitted, with surprisingly good grace, to what it regarded as a challenge to prove its managerial mettle to its co-venturers.

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Translating the agreement in principle into the Interim Arrangements for a Global Satellite Communications System consumed six months, involving the usual haggles over matters of detail. One of these was the occassion for the only high level intervention in the negotiations. In a final compromise of outstanding issues, Comsat officers agreed to accept a 61 percent interest in the system (instead of the two-thirds interest they had been demanding) and a voting arrangement that would have required the concurrence of an additional 8½ percent (the U.K. and one other participant) on certain crucial issues. But it seemed that the Comsat board, which had final authority, was preparing to reject this formula. At this point, George Ball, the Under Secretary of State, met with the Comsat directors and convinced them to accept. The Interim Arrangements were signed without further serious incident in August 1964.

Some incidents from the negotiating period illustrate characteristic vagaries of the policy-making process. In the middle of the negotiations, Comsat took the most significant technological decision then or yet made in the satellite communications field: it abandoned AT&T's random-orbit Telstar and opted for Hughes Aircraft's synchronous system. Launch was scheduled for April 1965. This was a bold, risky, and singularly fortunate and successful choice. It was made by Comsat on its own, with some advance coordination with AT&T, but without systematic consultation with the interested government agencies. The decision was regarded as primarily a commercial and technical one, although it was followed by a well developed campaign to exploit the increased leverage Comsat derived from its announcement in the international negotiations. The message to the Europeans was not exactly diplomatic: the train was leaving, and they had better get aboard. The decision had the further consequence of introducing a new party in interest, the hardware manufactures, who were little in evidence during the legislative debates or in the preparations for the international discussions. Hughes had the dominant position here. AT&T dropped out of the hardware picture, and became essentially a Comsat competitor, albeit one that was simultaneously a user of satellite circuits and for a time a larger shareholder with three seats on the Board of Directors.

A persistent question was the stance to be taken with respect to the Soviet Union. It was decided early to invite Soviet participation in the system, and at President Kennedy's express direction a number of high-level approaches were made, all of which were ignored. As the negotiations with the Europeans picked up momentum, however, the Soviets displayed interest and asked for consultations. Representatives of both countries met in Geneva in June 1964, by which time, the Interim Arrangements were well on the way to completion. It was recognized by all elements on the United States side that the structure contemplated by the Arrangements would have been wholly unacceptable to the Soviet Union. If a meaningful offer of participation were to be made, the European negotiations would have to be unwound. In this situation, the decision was taken—primarily by Comsat, the middle-level State Department officials heavily engaged in the negotiations and the Chairman of the FCC, also a member of the negotiating team—to treat the presentation to the Russians as, in effect, *pro forma*. The predictable result was that the Soviets evinced no further interest in participating in the system. What President Kennedy had conceived as a significant initiative for U.S.-Soviet space cooperation was thus interred with no official more august than an Assistant Secretary of State participating in the services.

A third example of idiosyncratic decision-making was the issue of military participation in the system. As an aspect of his budgetary stringency, Secretary McNamara, in 1964, vetoed a separate DOD system and began to explore with Comsat the possibilities of a joint civil-military system, partially financed and owned by DOD. (Today the military have their own command and control satellite systems, but use the commercial system for routine traffic.) It was apparent to State from the beginning that any arrangement for sharing ownership of the system with Defense would preclude agreement with foreign governments. Despite this conviction State could not immediately muster bureaucratic support sufficient to discourage the venture. Comsat's president, Charyk, pursued the matter assiduously, in part because of his DOD connections and in part perhaps because he saw this as a way of reviving the possibility of an all-U.S. system. He argued further that Comsat could not ignore the financial stability that DOD capital participation and use afforded. Three months of arduous negotiations raised the suspicions of the House Committee on Government Operations, and after several rounds of hearings it became apparent that congressional support for the combination was lacking. It then became possible for State and the newly appointed Director of Telecommunications Management to write a letter disapproving the project, at which point it subsided.

A word should be said about Intelsat, the consortium established by the Interim Arrangements. Although governments signed the matter agreement, the actual participants in the consortium were operating telecommunications agencies, each designated by its signatory government. By virtue of the Communications Satellite Act, Comsat was the United States participant. The Japanese entity and

perhaps one or two others were also more or less "private" enterprises. But most of the participants were governmental agencies in charge of telecommunications for their respective countries. Sometimes these were government ministries—often, as in France and Germany, the ministry of post and telegraph; sometimes they were government owned corporations. The consortium owned, on a joint venture basis, the space segment (but not the earth stations) of the global commercial system.

After the agreements entered into force, Comsat, with, for once, the unanimous support of all interested United States agencies, led an intensive and successful recruiting campaign. During the eight-year interim period membership in the consortium grew from about 20 mostly developed countries to more than 80, accounting among them for well over 95 percent of the world's international telecommunications traffic.

The governing body of the consortium was the Interim Communications Satellite Committee (ICSC), made up of representatives of each participant (or group of participants) with 1.5 percent or more of investment in the system. The Comsat representative chaired the ICSC during the early years; thereafter another participant was made chairman in alternate years. The ICSC was formally responsible, in the manner of a board of directors, for all major Intelsat decisions, including budget, system design, rates, capital calls, award of major contracts, and the like. It acted by weighted vote, with Comsat initially casting 61 percent (dropping under a formula, as new members were admitted, to about 51 percent at the end of the interim). Although, as noted above, for major decisions Comsat needed the concurrence of at least several additional participants, its voting power was, as a practical matter, decisive on almost all significant questions and was sufficient alone to block any action.

In practice, like most boards of directors, the ICSC was confined to a review and oversight function. Comsat, as manager, had the initiative on all matters to come before the Committee: it formulated the issues, negotiated the contracts, prepared the documentation, and controlled the agenda and the timing. Under the best of circumstances, a relationship of such blatant inequality would have been difficult to manage. But the circumstances were by no means the best. Comsat was both insensitive to the delicacy of the situation and unskillful in political maneuver within Intelsat. It did little to conceal the iron hand. The ICSC was housed in Comsat headquarters. For a number of years it did not even have its own telephone listing. Facilities for foreign members of the ICSC were inadequate. Comsat's officers tended to assume an aggressive, go-get-'em stance that clashed in tone with that of the largely bureaucratic representatives of other participants, and often overrode them on matters of substance as well.

On the other hand, the PPT orientation and narrow economic interests of the European members of the ICSC, led by France, constrained Intelsat development in a number of ways. Rates for satellite channels declined sharply during the interim period, but did not fully reflect the economies generated by the system. European PPT's are still subsidizing domestic traffic with satellite revenues. Decisions on the earth station/space segment trade-off tended to favor the space segment, requiring relatively costly earth stations and giving rise to complaints from the developing countries. Opportunities for promoting new traffic sources, particularly television transmission, were not exploited. The organization was under constant pressure to give hardware contracts to (higher cost) European producers. On all these issues Comsat's interests were aligned with those of the developing country participants. Yet it failed to make common cause with them, accommodating instead to the major traffic centers in Europe, but without fully satisfying their demands, especially as to procurement.

As a result, when the time came for renegotiating the arrangements, as stipulated in the Interim Agreement, Comsat found itself with few allies among the participants in the system. And this despite Comsat's remarkable operational record in getting an effective, functioning system up and working in a few short years. Whatever dividends in prestige the United States reaped from this really extraordinary achievement, were in considerable measure offset by disgruntlement and dissatisfaction generated by the management of the system. Given the inherent disparity of the parties, and the all-too-human tendency of giver to begrudge and receiver to resent favors, much of this was doubtless inevitable. In any case, Comsat failed in its self-imposed task of selling itself to its partners by its performance during the interim.

The incoherence and confusion of the relations between Comsat and the interested United States government agencies (to some extent reflected in the Communications Satellite Act) contributed to the result. A climactic episode of this kind was the approval of the Intelsat III contract with Thompson-Ramo-Woolridge (TRW). Comsat had the contract approved by the ICSC before the FCC had acted on it. Thereafter, the FCC, stimulated by Hughes, expressed doubts about the wisdom of the whole Intelsat III proposal. To the foreign participants in Intelsat, already dissatisfied with Comsat's dominance of the organization, it was obviously intolerable that a decision formally taken by the international consortium should be vetoed by the United States government by virtue of its regula-

tory jurisdiction over Comsat as manager. Nor was it possible to make them understand that the FCC is an "independent" regulatory agency. The State Department (now in the guise of the Deputy Assistant Secretary for Transportation and Telecommunications) presented these considerations to the FCC, which thereupon granted reluctant authorization to the *fait accompli.*

Thereafter, procedures were developed to insure consideration of important issues by all relevant United States agencies before rather than after ICSC action. These procedures, which give the State Department ultimate control of the instructions to Comsat, worked rather well until the consideration of the Intelsat IV contract, when Comsat again played a forcing game both in the FCC and the ICSC.

Domestic regulations

Whatever may be said about Comsat in its role as consortium manager, in its relations with domestic users and competitors, it is clearly under FCC jurisdiction. Although these relationships have significant foreign policy implications, and State Department views are a regular feature of FCC hearings on these matters, the decisions seem for the most part to be responses to the FCC's domestic regulatory clientele, with AT&T in a commanding position.

The first issue to come before the FCC was the ownership of United States earth stations, a matter finessed by Congress when it passed the Act. In its first decision, the Commission, influenced by the climate of urgency about the space program then prevailing, awarded 100 percent ownership to Comsat. Its decision stresses the need for unified decision-making and integration between earth station and space segment. The decision was subject to review after two years. But before the expiration of this period, the FCC had withdrawn from this position and established a pattern of shared earth station ownership, 50 percent to Comsat and 50 percent to be divided among the carriers in proportion to their use of the facility. The Commission gives no very convincing reason for this shift, and it seems to reflect the erosion of Comsat's political position and the fading glamour of the space enterprise.

The most important of the early decisions was the *Authorized User* case, which established the basic structure of the international telecommunications industry. The question was whether Comsat could sell satellite channels directly to bulk communications users, or whether it was limited to dealing with communications carriers—AT&T and the record carriers—who, in turn, would make the service available to the users. If the users were forced to deal with the carriers, rather than directly with Comsat, the carriers would naturally tend to prefer cable transmission, in which they had an ownership interest, over the satellite, in which they only leased channels. Thus the decision would have an important impact on the rate of growth of satellite traffic.

There was also a major price element in the equation. The carriers charged the users a single "composite" rate, whether the transmission mode was satellite or cable. The rate reflected a mix of satellite and cable costs, and did not give the user the full benefit of satellite economies if the satellite mode were in fact used. But if the user could deal directly with Comsat, it could get satellite rates unburdened by a share of the cable costs. The difference in the *Authorized User* case was between $4,200 per circuit per month offered by Comsat for transpacific circuits and $10,000 per circuit per month, the lowest carrier price.

The case came up in circumstances most favorable to Comsat. The applicant was the DOD, which needed thirty circuits across the Pacific to handle the burgeoning Viet Nam traffic. The language of the statute gave the government a stronger position than other non-carrier users.

Despite these helpful aspects, however, the FCC held against Comsat. The only "authorized users" of the satellite system under the Act, and thus the only customer with whom Comsat could deal, were the carriers, except for very narrowly circumscribed special circumstances. Other bulk users must deal with the carriers and not directly with Comsat. For this bounty, the FCC exacted a rate reduction from the carriers, so that the circuits were ultimately leased at about $7,000 per month.

The particular objects of the FCC's solicitude in this extraordinary case were the record carriers. The leased line business from bulk users was their mainstay. AT&T had all the international telephone business. Individual telegraph messages and telex traffic would not sustain the record carriers. Yet they could not compete with Comsat for leased line customers at the rates Comsat was able to offer. The choice as the Commission saw it was to abandon the record carriers or to limit Comsat's access to bulk users. The questions of price to consumers and satellite load factors were secondary.

The third set of decisions by the FCC established the mix of cables and satellites in the Atlantic basin. Setting the pattern, the Commission in 1966 authorized duplicating cable and satellite facilities for United States-Carribean traffic. Then, in 1968, it authorized a new 720-circuit transatlantic cable, TAT-5, at the instance of AT&T and over the opposition of Comsat. In a long-range policy pronouncement in 1971, it reiterated its intention to divide the market between cables and satellites, and the fol-

lowing year authorized the construction of 4,000 circuit TAT-6, to go into service in early 1976. The assumption was that another still larger cable would be ready to go in 1979.

In each case, projected satellite capacity was adequate to meet anticipated demand, except, arguably, in the North Atlantic for a few months before the Intelsat IV launch. Indeed, at the times of the TAT-6 authorization, there were 8,000 empty satellite circuits. Although the issue is not directly addressed by the Commission it seems tolerably clear that the satellite has a strong economic advantage. A National Academy of Sciences study concluded that a premium of two-three million dollars would be paid over a decade for each percent of new capacity served by cable rather than satellite. The Commission cited considerations of reliability and redundancy, rather than economics, as the ground for protecting the cable, together with the consequent need for encouraging cable R&D. But the satellite systems themselves have been highly reliable, and provide back-up capacity both in orbit and on the ground. As for R&D, encouraging it seems to require authorizing the use of its products even at a considerable economic penalty.

The Commission tried to limit the impact of its policy somewhat by requiring the carriers—who under its earlier decision were the only authorized users—to split the traffic equitably between their owned cable circuits and leased satellite circuits. This requirement has been progressively relaxed however, and it is now apparent that at least the record carriers have been discriminating against cables in their division of traffic. Also, as in the *Authorized Users* case, the Commission has insisted on being rewarded for its generosity with rate reductions by the carriers—25 percent or more on the Atlantic route.

It seems apparent that the FCC, as usual, has struck a satisfying balance among the competing domestic interest—AT&T, the record carriers, Comsat and the consumers—awarding something to each. In this case, the deference to cable was supported by cable-owning European states, whose views were made known to the Commission by the State Department, and cited as "foreign policy" considerations in support of the decision. It is not clear whether the views of other Intelsat members were sought. Nor is it clear what the ultimate outcome of the FCC policies will be. It may be that satellites will win the race despite the hurdles interposed by the Commission. If so, these may prove to be not very onerous costs of the transition.

Finally, the FCC addressed at well-nigh interminable length the problem of the appropriate place of satellites in domestic communications. The issue was precipitated in 1966 by ABC's application for authorization for a satellite to provide television networking services throughout the United States. ABC projected large savings over the AT&T's charge for terrestrial interconnection. Both AT&T and Comsat opposed, the latter claiming a preferred legal status as domestic operator. Other networks, carriers and interested parties chose up the expected sides. And applicants for FCC authorization multiplied. Into this situation stepped the Ford Foundation, arguing that the prospective savings from networking via satellite were a "public dividend" and should be devoted to the support of public broadcasting.

The proceeding implicated international concerns in two ways, neither of them very well understood or much considered at the time. In the first place, the possible proliferation of domestic systems raised for the first time the problem of spectrum and orbit management. In the second, the United States, in relation to Intelsat, was espousing the view that "special systems" were forbidden by the commitment in the Interim Agreement to "a single global system." But this position, against which pressures were already gathering, would be compromised, perhaps totally if a United States domestic system was authorized.

Nevertheless, the FCC proceedings went forward on the self-evident assumption that the United States could launch its own domestic system if it chose, and on the regulatory assumption that the FCC would authorize but one such system. This second assumption was challenged by a memorandum from President Nixon's new Director of the Office of Telecommunications Policy (OTP) marking the entry of a new, potentially powerful White House actor onto the scene. The memorandum urged the Commission to adopt an open market policy, authorizing any financially qualified applicant to launch a system, with the survivors to be determined by competitive forces. The Director noted that the portion of the orbit involved was of special interest both to Canada and Latin America, but asserted, on the basis of his calculations (but without consultation with these countries), that there would be plenty of room for all and no fear of preemption.

The Commission, while not quite taking the OTP at its word, ultimately authorized three domestic systems reflecting the consolidation of proposals of most of the original applicants. One went to Western Union and RCA; a second to Comsat and AT&T; the third to Hughes and General Telegraph and Electronics. The first two were planned to serve the regular commercial market. Hughes planned extensive interconnection of local cable TV systems. The networks, except as customers of one or the other of the authorized systems, and the Ford Foundation dropped out. Meantime, Canada had gone forward with its own domestic system, run by

a public corporation with some of the features of Comsat, and using well tried Hughes hardware. The first exercise of any of the domestic authority granted by the FCC, was WU's rental of channels in the Canadian satellite to carry United States domestic traffic.

The definitive arrangements

An international conference—gargantuan in size and interminable in duration—rounded out the first decade of the satellite communications era. This conference was the procedure for review of the interim arrangements mandated when the arrangements were set up in 1964. The creators met to survey their enterprise, and despite its manifold accomplishments, refused to see that it was good. Drastic changes were made in the institutional structure of the Intelsat system, in most cases at odds with the policy objectives of the United States —as well, incidentally, as those of most of the other participants.

Preparatory work in the United States began early. The Interim Agreement provided that the ICSC should report its views on permanent organization to the participants by 1969. Looking toward this ICSC exercise, President Johnson issued another general policy statement on Intelsat's third birthday in August 1967. The statement, although general, bore traces of a compromise between State and Comsat views, with relatively little original input from other sources, including the White House. It reaffirmed support for Intelsat; agreed to a ceiling on United States voting power; and made approving noises about further internationalization of the organization including a proposal for an "assembly" of all the participants. Nothing was said about a replacement for Comsat as manager. There was a renewed invitation to the Soviets to join up. Domestic systems were approved if economically justified by the traffic volume, regional systems only if they did not divert substantial traffic from Intelsat, and then only under Intelsat "supervision." The President also assembled a high-level interagency task force on international telecommunications, chaired by the Under Secretary of State, with a broad mandate for policy review.

The Task Force labored mightily for two years. On the definitive arrangements, it did not depart from the ground marked out in the President's policy statement, or indeed from Comsat's preferred position. Its principal contribution was to recommend a single "chosen instrument" for United States international telecommunications. This entity would embrace not only Comsat but the record carriers and AT&T's cable operations as well. The chief objective of this arrangement was to rationalize investment in competitive technologies, by submitting these decisions to an optimizing managerial process rather than a sufficing regulatory one. The recommendation was bound to raise hackles that one wonders how any bureaucratic interagency study group came to endorse it. The answer probably lies partly in the forceful character of the chairman, Yale antitrust professor Eugene V. Rostow, and partly in the relaxing grip of the Johnson administration as it prepared to leave office. In any event, nothing came of the Task Force proposal. It was completed in the last months of Johnson's term, and he declined to endorse it. Neither did he reject it, however. As a kind of prank, he transmitted it to the new arrivals to dispose of, and they, after holding it cautiously at arms length for some time, finally released the report without comment.

Thus, when the conference on definitive arrangements opened in February 1969, Comsat was in position to dominate United States policy making. Its opening position called for the continuation of Intelsat as a consortium, with a Governing Board to succeed ICSC as the principal decision-making body. Voting power (and investment) would be in proportion to use, with a ceiling of 50 percent on the vote of any single member. Action would be by a straight two-thirds majority (giving Comsat a unilateral veto). An Assembly of the Parties would be authorized to debate all matters of interest to the consortium but to act on nothing. Comsat, with an internationalized staff, would continue as manager under a fixed-term (but renewable) contract.

Comsat probably expected to have to retreat somewhat from the ground it had staked out. But it never understood the depth or the essential basis of the opposition to it. Leaving aside all the factors of animus, malice and self-seeking, of which there were plenty to go around, there was a fundamental difference of conception as between Comsat and most of the other Intelsat participants. They felt that policies and responsibilities of governments were essentially engaged in any system of space communications. Comsat continued to think of the enterprise as basically commercial and technical. It tended to deprecate the opposition and attribute to it shallow and insubstantial motives. The State Department again anticipated the general resistance, but again was without the necessary bureaucratic leverage vis-a-vis Comsat and the three presidentially appointed ambassadors who headed the United States delegation over the years of negotiations.

In the Definitive Agreements, concluded after more than two years of negotiations, the United States suffered major rebuffs on almost every element of its opening position. The Intelsat consor-

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tium was replaced with a formal international Communications Satellite Organization. Comsat was placed under a voting limit of 40 percent, instead of the 50 percent it proposed, and was stripped of its veto by a provision requiring at least four members to take or block any action. Comsat was not removed as manager, but was limited to one six-year term, during the last-half of which it would be subordinate to a Director General appointed by the Governing Board who would be organizing the transition to an international staff. The Assembly of the Parties, which Comsat had conceived as a debating society, was given significant powers in connection with the management arrangements, amending the Agreement, and determining whether the Organization would engage in "specialized" telecommunications services (navigation, meteorology, and direct broadcast). In the Assembly each party cast one vote. In addition, a new organ, the Assembly of the Signatories, was given in effect concurrent jurisdiction with the Governing Board on rates and financial matters. Finally, specialized and regional systems outside the Intelsat framework were authorized, subject only to loose, recommendatory review. Only on the issue of linking voting to use and procurement to economic performance did the Comsat view come through unscathed.

The Definitive Agreement achieved the principal objective of the negotiation: to keep the system going. Beyond that, however, the salient feature of the outcome seems to be that everyone lost. On the central issue of control of the system, the result seems to embody the worst of both worlds. Comsat's position in the Intelsat organization is significantly reduced. Of course, the United States will always speak with a powerful voice in Intelsat. The size of its technical and financial contribution ensures that. But Comsat's formal powers have been drastically cut back. It seems likely that its managerial function will terminate in a few years. Thereafter, the corporation's functions will be only to cast the United States vote on the Board of Governors (pursuant to instructions of the United States government) and to retail its allotment of channels to United States carriers (subject to the regulation of the FCC). These hardly seem sufficient to absorb the energies of a major American corporation, much less to fulfill the implicit inducement to Comsat's shareholders that they were buying a piece of the space age. Comsat's response has been to turn its attention to domestic satellite systems, research and development, and consultant activity on other space communications applications. It is not a very venturesome prediction that in another ten years Comsat's relationship with Intelsat will be seriously attenuated.

On the other hand, the coalition that sought to wrest control of the consortium was also balked. Comsat will remain as manager until 1979. During that time, the design and procurement of the next generation of satellite will have been accomplished. It seems likely that the Intelsat V will increase available satellite capacity by an order of magnitude, and will establish the technical and operational structure of the system through the 1980's. No doubt many innovations and improvements will be made over the years, but it is probable that when the Director General and his international staff take over in 1979, the basic frame of reference within which the system is to operate will have been firmly established. The task of the international management will be the important, but relatively routine one of carrying forward a going concern, much like the task of European post and telegraph administrations.

Finally, even with the reduced role of the United States, the other participants were unwilling to entrust the new organization with broad and comprehensive responsibilities in the whole field of satellite communications. The potential of the consortium as a focal point for spectrum and orbit planning and for aggressive exploitation of new uses for satellite communications has, I believe, been lost. The provisions of the Agreements confining Intelsat to public telecommunications services, except with the consent of the Assembly of Parties, have the effect of consigning the organization to the accepted and conventional role of an international carrier of voice and message traffic. The main thrust of further development in satellite communications is taking place outside the framework of the Intelsat organization.

CURRENT ISSUES AND VULNERABILITIES

With the conclusion of the Definitive Arrangements, and the rather confused role they imply for Intelsat, issues of policy toward and in Intelsat no longer dominated the horizon of U.S. satellite communications policy. Instead, a series of questions have come to the fore growing out of the assumption of a multiplicity of independent satellite systems. These are principally problems of planning and coordination that might have been dealt with under the Intelsat umbrella if the Definitive Arrangements had adopted a more generous attitude toward the role of Intelsat. Policy discussion has turned to the availability and adequacy of other mechanisms for addressing these issues. The focus has been on questions of technical regulation, the management of the frequency spectrum and geostationary orbit. There is also the question of the extent to which the United States should promote

the development of independent systems, particularly in the Third World, by means of technical and financial assistance for planning, procurement and software, and by provision of launch facilities. Finally, there is a broader political controversy concerning the regulation of direct broadcasting from satellites.

Before looking more closely at these issues, we should consider the likely extent of proliferation of systems in the next decade or so, that is to say during the period when current technological conceptions will remain dominant. It is by no means clear that very many systems will in fact come into being. In North America Telesat and the Canadian system are already operational. In addition three domestic systems have been authorized for the United States, with perhaps a fourth to come. In the developing world an Indian domestic system, primarily for educational purposes, will be given a test run this year using NASA's ATS-F satellite. A Brazilian system, similar in function and basic concept, is in the advanced planning stage, and may also use ATS-F for a trial run. A good deal of planning has gone into the French sponsored Symphonie, proposed sometimes as a Franco-German system and sometimes as a European system, and Franco-phone, intended to link French speaking areas in Europe, Africa, the Carribean and Canada. But aside from "la gloire," no very convincing economic or technical justification has been advanced for these systems, and the launch dates keep slipping. Beyond these, there is mostly just talk. The projects discussed, in rough order of seriousness are: a Japan-South East Asia system; two satellites, one military and one civil, for Iran; an Andean system; a West African group; and a system for the Arab League. To these must be added an unknown number of military communications satellites. Consideration should also be given to the possibility that navigation and some kinds of resources monitoring satellites might also be candidates for positions in the geostationary orbit.

Even if all these systems should be realized, a most unlikely outcome, there would be nothing approaching serious congestion of orbit and spectrum. The numbers are enough, however, and the uncertainties about the pattern of use beyond the present technology are large enough, to keep the issues of regulation and promotion alive at the technical and bureaucratic, if not the political level.

Spectrum and orbit regulation

These problems implicate one of the oldest international organizations extant, the International Telecommunications Union (ITU). It had its origins in an 1865 convention to coordinate European telegraph systems, so that messages could pass freely from one nation to another. Subsequent conventions on telephone and radio were consolidated in 1932, in a single convention establishing the Union.

The ITU remains essentially an international organization of pre-U.N. vintage. Its Secretariat and standing organs have little independent authority. Indeed, until 1971 it did not have a permanent "charter," but only a convention explicitly subject to periodic revision. Its main business is done in plenary conferences and other meetings, dominated for the most part by the ten or a dozen major international communications powers, including the United States.

The chief substantive commitment of ITU members in the radio field is to avoid "harmful interference." To this end the ITU, in periodic Administrative Radio Conferences, allocates portions of the spectrum to specific kinds of radio service. The allocations are for the most part on a world-wide basis, though sometimes with regional variations. Governments wishing to use particular frequencies within the allocated bands for broadcasters within their national territories, present the proposed usage to the ITU's International Frequency Registration Board (IFRB), which circulates the application among the member states for review and comment. If, on the basis of this limited investigation, the IFRB is satisfied that the application is consistent with the frequency allocations and will not cause harmful interference, it enters the proposed frequency use in the International Register, thus giving the applicant state the "right" (the exact extent or legal character of which is not very clear) to use the frequency for the purposes and in the manner specified in the application.

The ITU also has an International Radio Consultative Commission (CCIR), including industry representatives, that makes recommendations, binding in practice, on standards and specifications for radio equipment, transmission practices, message processing and handling, and the like.

The United States has no permanent representative to the ITU because the organization has no standing plenary organ. Routine contacts with the secretariat are handled out of the U.S. Mission in Geneva. The discussions at the CCIR are conducted for the most part by representatives of major United States suppliers of telecommunications hardware and services.

For Administrative Radio Conferences, the United States policy making process is a bit more complex. There have been two such Conferences dealing with space matters, one in 1963 and one in 1970. In both cases, the United States delegation was headed by a relatively prominent person from

outside the government. The delegation has been large, perhaps too large, and dominated numerically by FCC and Comsat representatives, with a few relatively junior State Department officers.

The basic United States position for these Conferences has been developed by the Inter-governmental Radio Advisory Committee (IRAC), chaired now by OTP, and made up of the major spectrum using agencies in the government plus the FCC. IRAC has traditionally been heavily influenced by DOD, which accounts for more than one-quarter of the spectrum use in the United States. (Incidentally, international allocation of spectrum for military uses is made by more or less tacit agreement at the ITU Conferences.) This machinery has apparently worked reasonably well on questions of spectrum allocation. Both in 1963 and 1970, the United States was able to present a position that generated substantial international support and at the same time secured basic United States interests in the field. As a result, in both cases, the essentials of the United States position were adopted. In 1963, the Conference agreed on a relatively generous and firm spectrum allocation, sufficient to permit Comsat planning to go forward, over the opposition of the Soviet Union, which proposed a more limited and tentative allocation. The 1970 Conference expanded the space communication allocation considerably, and opened new portions of the spectrum for these purposes.

On a slightly less technical range of issues, spectrum and orbit planning, the United States has been a good deal less successful. Under the leadership of OTP, FCC and, to some extent Comsat, with State bringing up the rear, it has taken a rather rigid position against international regulation in these fields. The argument has been that serious congestion is not threatened and that any international intervention is likely to take the form of a rigid allocative plan that will significantly reduce the efficiency of utilization of the resource. The technical analysis may well be sound, but the position fails to reckon with widespread apprehension that it is a mask to permit extensive United States preemption. As a result, the 1970 Conference, over United States objection, substantially tightened up the procedure for registration of frequencies for space systems by the IFRB. New space systems must now coordinate not only to prevent interference with terrestial facilities, but also with existing and to some extent with anticipated space systems. In the direct broadcast field, a system is required to avoid irradiating the territory of non-members to the extent "feasible." If a non-member complains, the judgment of what is feasible presumably rests with the IFRB when it decides whether or not to register the system. Finally, a world planning conference for satellite communications systems was scheduled for 1976–77. Although the United States was able to dilute extreme demands for spectrum/orbit allocation and stave off the creation of formal veto powers on new systems, the 1970 regulations add up to a fairly significant international regulatory constraint on new satellite systems.

As it became increasingly apparent that the ITU was going to be vested with expanded regulatory powers in the satellite field, a number of outside groups proposed that the United States should take advantage of the ITU Plenipotentiary Conference in 1971 to try to strengthen the ITU to meet its regulatory responsibilities. The proposals were hardly radical, but the United States position for the Plenipotentiary, generated by a relatively low level interagency bureaucratic negotiation opted essentially for the status quo.

As a result of this history the United States faces widespread, if subdued, resentment and skepticism of its motives in this field. It is far from certain that these attitudes will prove very costly, however. If the levels of spectrum/orbit congestion are no higher than now seems likely, the pressure for international regulation may fade. Or even if the ITU promulgates an allocative plan, it may not really inhibit the United States. At a somewhat higher level of use, however, such a plan, slicing up the orbit into rigid, predetermined slots, might be at a minimum an inconvenience and conceivably a serious interference with United States programs. It is hard to believe that, as a tactical matter, opposition in principle to all regulation is the best way to sell the really rather sensible United States alternative to allocative planning which is a flexible, managerial approach.

Assistance to separate systems

In the late 1960's, the Export Import Bank, with the approval of the President, undertook a program of loans to developing countries for Intelsat earth stations. The program reflected Comsat's strong desire, fully endorsed by the government, to expand the membership of the Intelsat system. Between 1969 and 1972 financing was provided for some 18 earth stations, at the same time assisting United States hardware manufacturers in developing this market. Until the 1970's, substantially all the earth stations in LDC's were of United States manufacture, but in more recent years Japanese and European competitors have gained a substantial share of the market, driving the price of a standard earth station down rather significantly in the process. At the same time the interest of the Export-Import Bank seemed to cool.

The center of pressure for United States assist-

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ance to developing countries in satellite communications has not been AID but NASA. Although much of the development work for the Indian program was done at the Indian Space Center at Amehdabad, NASA has been continuously involved, and India has provided one of the major experiments for the ATS-F. India has insisted on maintaining complete control over the software for her program. But in Brazil the United States has provided considerable assistance in this respect, again looking toward a trial run on a NASA applications satellite in the near future.

In a period of declining NASA budgets, the question of United States policy on the provision of launches became a matter of some controversy. The Soviets have been slow to develop synchronous orbit capability, and in any case, as a practical matter, Russian launch services are not likely to be made available to other nations. As a result, NASA has, in effect, a launch monopoly, and any country seeking to establish an independent system must use its services.

NASA itself has advocated a generous policy of providing launch services on a reimbursable basis. Such launches would strengthen NASA's overall program. On the other hand, the position cut across the United States policy of discouraging the growth of independent systems. The discrepancy was probed by the French with inquiries about the use of NASA facilities for the proposed Symphonie. Of all the special systems under consideration, Symphonie was most directly competitive with Intelsat, and for a considerable period Comsat was able to prevent a formal policy decision on the question of launch services. The hesitation was exploited by the French, who charged that the United States was using its launch monopoly to protect the dominance of Comsat in satellite communications. Ultimately NASA announced that it would provide launches for systems that were technically and economically compatible with Intelsat. This left the question of Symphonie in doubt, and seemed on the whole to represent a Comsat victory in the internal fight. The substantial failure of the effort to limit independent systems in the Definitive Arrangements has shifted the balance of forces within the United States. A recent announcement rescheduling the first Symphonie launch for 1977 indicates that NASA facilities will be used.

To date, the issue of launch services has been mostly a theoretical one, for, except for Symphonie, there were no credible candidates for separate systems. If some of the possibilities described above should materialize, however, the questions would arise more insistently whether NASA should act as a kind of common carrier, supplying launches for all comers on a non-discriminatory basis, or whether the United States should use its monopoly as leverage to secure communications or space objectives or other unrelated political goals. NASA and State are likely to be split on this issue, and on the record, it seems likely that State will prevail, despite the predictable reactions of applicant countries and their supporters if the leverage is exercised too egregiously.

Direct broadcasting

To date, all satellite communications pass through a relatively expensive central earth station at the receiving end before reaching the ultimate addressee. This is true not only of individual messages but also of television programs, for which the satellite acts only as networking facility. It carries the program from the country of origin to the central earth station in the destination country. From there it is sent to ordinary television stations, which broadcast it to the viewers' sets. The government's control of the receiving earth station, whether regulatory or ownership, gives it the power to control what programs reach its national audience.

More powerful satellites, however, would be able to broadcast directly to the viewer's set without the mediation of a central earth station subject to government control. This is called direct broadcasting, and the possibility has, not surprisingly, given rise to a good deal of concern on the part of many governments.

As yet there are no direct broadcast systems. But the technology is well within the state of the art. Indeed, the experimental Indian system plans to use an intermediate mode whereby the programs will bypass the central earth station and go directly to "community receivers" mounted in a market, school, or other such location. On the other hand, it is hard to envision a political or economic incentive strong enough to support the very heavy costs of a true direct broadcast system.

Despite these rather chancy prospects, the political issue of regulation of direct broadcasting has grown increasingly heated over the past decade. The Soviet Union took the lead in precipitating debate by putting forward in the United Nations General Assembly a draft convention embodying a detailed code to govern the content of direct broadcasts from satellites. The question was referred to the U.N. Outer Space Committee and thence to its Working Group on Direct Broadcasting, which is now the international decision forum on the issue.

Despite the lead taken by the Soviets, concern about unwanted direct broadcasts is by no means confined to governments of closed societies or police states. In particular, such liberal western states as the United Kingdom, Canada and Sweden have

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very firm national policies on the kind of domestic television service they think appropriate, and they have no wish to see these decisions upset by uncontrolled broadcasting into their territories from outer space. The developing countries add objections to the inundation of indigenous cultures and the distortion of development plans by televised promotion of the values of high consumption societies.

The United States is the only nation with the technology, economic resources, and perhaps the commercial incentives to mount a direct broadcast system. Thus, most of the concerns described previously, though expressed in general terms, are in fact directed at the United States. Our isolation on this issue was underscored when the United States cast the only vote against the resolution referring the Soviet draft convention to the Outer Space Committee.

Within the United States, the chief private participants in the policy process have been the major television networks. They vigorously articulated a position in rigid opposition to any kind of international regulation. In support, they adduced international texts endorsing the principle of free flow of information and argued that the First Amendment prohibited United States adherence to any regulatory convention.

In the face of this kind of heavy artillery, and without support from any significant public constituency, it would have been surprising if the United States government had taken a different view of the matter. But is appears that the principal agencies involved—State, OTP, and to a lesser extent, the FCC—reached the same position as the networks without much prodding. For State, in addition to opposition, on principle, to regulation of media, there was the consideration that acquiescence here would set a precedent for international intervention on related space and information issues (e.g., ERS, the convention on war propaganda, and the content of text books and educational materials).

Nevertheless, pressures in the U.N. forum have worked inexorably to loosen up the United States position. Little support has materialized for the Soviet convention, but a broad consensus is emerging behind a position advanced by Sweden and Canada to require consent by the receiving country before another state may transmit direct broadcasts to it.

It is too early to say how the controversy will be resolved. The issue is of low-visibility and of little intrinsic importance, given the dubious practical prospects for direct broadcasting in the near future. It may be that State's incipient flexibility will fall victim to the new impatience with "unruly majorities" in the U.N., and this likelihood will be enhanced if Congress begins to weigh in on the question. There is an argument for accepting some, perhaps attenuated version of the Canadian-Swedish consent proposal, especially in view of the considerable power already given to potential recipient countries under the ITU regulations. If the United States should continue, nevertheless, to hold out against a sweeping consensus in the Outer Space Committee, it would no doubt be set down as another example, and not the most important, of arrogance and intransigence on matters of common concern. But beyond this political cost, failure of agreement would impose no practical constraints on United States actions: it is unlikely that we will soon wish to mount a direct broadcasting effort, and if we did, we could do so unilaterally.

CONCLUSIONS

The foregoing summary surely does not describe a coherent and orderly policy-making process. For the most part, the issues involved have not been politically strident enough to claim high-level attention in the White House or even in the State Department. After the initial Act of Congress creating Comsat, the picture is for the most part one of shifting and confused interplay at the technical level among the United States agencies directly concerned. Comsat, as a hybrid of private company and legislatively chosen instrument, was well situated to exert commanding influence on a broad range of policy questions. But the focus of decision shifts from one agency to another depending on the formal guise in which a particular issue arises. The decisions seem to reflect an amalgam of the bureaucratic imperatives of the agencies and the immediate interests of the private constituencies directly concerned. There is no effort at systematic elaboration of policy in some broader perspective of national interest—except for the two Presidential statements, and these are both somewhat illusory on this score. With the possible exception of State's initial promotion of some form of international structure for the system, foreign policy considerations usually entered this amalgam only peripherally, although the field is, as it were, inherently international.

On the other hand there is much to be said for the substantive policy that emerged from this process. In the first place, and most important, a major new technology has been brought into effective service in an amazingly short time. In less than a decade, the Intelsat network has become the principal component of the world's long haul telecommunications systems. The chief benefits that were foreseen have, in large measure, been achieved:

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cheap and plentiful international communications between major centers; the inclusion of developing countries in the international telecommunications net; increasing cultural exchange; sharply declining costs; the establishment of a fairly effective organization for international participation in the system.

Moreover, these accomplishments have not been marred by major technical or political blunders. If United States policy has engendered its quota of suspicion and ill-will, this has been accompanied by a goodly measure of admiration for the United States technical and political achievement in putting the system together. Moreover, especially when one looks at the situation in other fields, it is hard to say what kind of policy would have avoided these political costs. Although, to be sure, there were many occasions when United States representatives could have pursued their objectives with more tactical skill and sensitivity.

If there is to be criticism of the first era of satellite communications policy, it will be less for sins of commission than for opportunities foregone. One has the nagging sense that the advent of this new technology could have meant more than simply the provision of a better international public utility—that it could have been the occasion for devising and putting into operation an international communications system that would be flexibly responsive to emerging communications needs of an increasingly interlinked world. But it must be admitted that no one in government or out has been able to elaborate such a system, much less project it in politically compelling terms. And it may be that the demand for such a system reflects more a hankering for tidiness and order than any practical international or communications values.

Although the policy-process here described must thus be evaluated with at least modest satisfaction, there is room for a final, cautionary qualification. The setting in which policy was made, although not without its hazards and uncertainities, was extraordinarily benign by comparison with others. The technology advanced smoothly and comprehensibly, without serious bugs or delays. It promised benefits but never threatened catastrophe, like developments in the nuclear, food, population, or environmental fields. The economic demands and resource limitations were much less stringent than had been anticipated, and turned out in the end to be comparatively modest. As a result, problems of allocations and discrimination have not been severe. For all these reasons, and perhaps others, the issues have not had much political resonance. If some of these elements are lacking—and there is no guarantee that they will persist—the inchoate kind of policy process that operated over the last 10 years might not continue to produce satisfactory results.

Ocean Pollution: Organization for Environmental and Resource Interdependence

Ann L. Hollick
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INTRODUCTION

The oceans are the source of life on this planet and are responsible for our global climate. In the most fundamental sense, therefore, all nations have an interest in the continued health of the oceans whether they have coastlines or not. Because all people are dependent on the oceans, nations are interdependent. The actions of one with regard to the ocean environment will affect all others, although the time scales may be extremely long. Just as all nations have an ultimate dependence on a healthy ocean environment, all countries share a responsibility for ocean pollution.[1] Thousands of substances used or produced by man find their way into the oceans.[2] There are four general modes of entry: man-made outfalls, rivers and estuaries carrying materials dumped upstream, airborne or atmospheric pollution, and man's activities in the ocean such as offshore mining, ocean dumping, or pollution caused by vessels. The first three paths of ocean pollution constitute by far the greatest part of marine pollution. Because they relate to the activities of states within their own territories, however, they have not generally been the object of international negotiation or regulation. The fourth source of ocean pollution, man's activities in the oceans, has been the focus of several international negotiations and conventions and is therefore appropriate to the consideration of the policy process below.

The nature of international interdependence in the ocean pollution area is physical, in the first instance, with important social consequences as well. The physical interdependence may not be uniform throughout the oceans, and geographical and time frame distinctions must be made. In terms of ocean pollution, two types of ocean zones must be distinguished: coastal areas and the open ocean. The coastal ocean includes estuaries and wetlands, lagoons, the waters over continental shelves and marginal seas such as the North Sea, the Persian Gulf, the Mediterranean, and the Sea of Japan. These seas have special problems, and due to proximity the nations bordering them are particularly vulnerable to the actions of the others. Pollutants in coastal oceans are removed by mixing with the open ocean, sedimentation, degradation, and harvesting of living resources. In coastal areas residence times are, therefore, relatively brief ranging anywhere from months to decades.[3] The open oceans, however, are the final repository of pollutants and there residence times may measure from hundreds to millions of years. Over most of the ocean, warm surface waters are separated from

[1]Ocean pollution is here taken to mean those processes to which man contributes and which cause undesirable effects on the oceans. The United Nations definition of marine pollution is the "introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazard to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water, and reduction of amenities."

[2]While some occur naturally in the marine environment, others do not. It is not easy to determine what is a natural phenomenon and what is caused by man. Although science can measure levels of pollution more accurately than ever, there remains an acute lack of information on existing pollution of the marine environment. Scientists are hampered by the fact that environmental problems involve phenomena that vary over time and result from combinations of conditions that may never recur.

[3]Residence time, or the time a pollutant spends in the oceans, is given as the total amount in the oceans divided by the total flux into or out of the oceans. Edgar D. Goldberg, "Marine Pollution: Action and Reaction Times," *Oceanus*, Fall 1974, Vol. 18, pp. 6–16.

the cooler deep waters by a rapid increase in density. Once in the open oceans, pollutants are dispersed by mixing. While mixing between surface and deep ocean waters is slow, horizontal mixing proceeds more rapidly. Scientists estimate that it would take only ten years for pollution of the surface waters of the North Atlantic to spread equally throughout the surface waters of the North and South Atlantic.[4] Thus the case might be made that while the countries bordering the North Sea are highly and immediately interdependent in terms of ocean pollution, the nations bordering the South Atlantic are interdependent with those of the North Atlantic in a more remote but nonetheless real fashion.

The United States is vulnerable to degradation of the ocean environment in two respects. The United States shares the common interest in maintaining the capacity of the ocean to support the environment of this planet. Secondly, of 118 independent coastal nations the United States has the fourth longest coastline in the world with a specific interest in the ecological and economic welfare of its coastal zones. Like the other 117 coastal nations the United States is highly vulnerable to its immediate neighbors, and to the activities of other users (i.e., navigation) off its shores. In practice, however, this vulnerability is asymmetrical. With only five percent of the world's population, the United States is perhaps the world's major polluter, consuming about one-third of the world's non-renewable resources (including energy) annually. The United States contributes to oceanic pollution via the atmosphere, river run-offs and out-falls. The United States is a major user of the oceans with environmental consequences stemming from its activities in ocean dumping, navigation, and mineral exploitation. United States activities affecting the environment have generated conflict with both Canada and Mexico. These have been resolved bilaterally with some recognition in the United States of its environmental responsibilities toward its neighbors and its own vulnerability. Regional efforts to control marine pollution are facilitated by this perception. Whether it is traffic of coastal vessels to and from U.S. ports, recovery of offshore oil, or dumping offshore, the interests of neighboring countries are more immediate than those of distant nations. Supported by U.S. environmental groups, these nations have been able to apply effective pressure to reduce or regulate these activities.

[4]John A. Knauss, "Ocean Pollution: Status and Prognostication," in John Gamble and Giulio Pontecorvo (Eds.) *Law of the Sea: The Emerging Regime of the Oceans*, Ballinger, Cambridge, pp. 325–326.

"Rational" Management of the Marine Environment

Proceeding from the fact that nations are interdependent with regard to the state of the marine environment, certain management approaches would seem to suggest themselves. It is instructive to elaborate these as points of reference before turning to a consideration of present national and international decision-making processes.

A purely environmental approach to ocean pollution would proceed from the assumption of the desirability of a clean ocean. If agreement could be reached on how clean is clean enough, the next step would be to examine the sources and consequences of pollution. With this information, a decision could be taken as to the instruments and alternative means for reducing pollution. Since the major source of marine pollution is land-based activity, the result would necessarily include measures restricting land-based pollution as well as activities in the oceans. The means or instruments would combine a mix of legal prohibition, limits on levels of discharge of certain substances, and setting of new design and construction standards. Because the problem is global in scope, this approach would have to be undertaken internationally.

The addition of cost-benefit calculations would alter a decision-making process focused exclusively on environmental goals. Such an approach would incorporate economic with scientific information, weighing the costs of activities which might deteriorate the ocean environment against the alternate costs of achieving the same objectives (i.e., dumping of wastes, extraction of minerals, etc.) in other ways. While difficult to compute the benefits to society of eliminating a pollutant, the cost in increased price to consumers of abatement through a variety of measures is more easily calculated. The distributional consequences of a pollution measure, both domestic and international, brings other non-environmental factors into consideration. Priorities would have to be established between the environment and other goals such as low costs of transportation or recovery of offshore oil.

The addition of political factors to a marine environment decision-making process brings the observer into the present policy context and further from a model that is rational in strictly environmental or economic terms. The discrepancy between the existing situation and the policy models is accounted for by the fact that decisions regarding the marine environment are not taken in isolation. Thus while there may be a moral consensus on the desirability of a clean ocean, as well as environmental interests promoting this view, a clean ocean is in competition with goals of other interests. Whether

the policy at issue is an ocean-dumping convention, reducing pollution from ships, or standard-setting and enforcement rights by flag and coastal states, these environmental decisions have direct and in some cases substantial consequences for other interests. Virtually all ocean users or interest groups have a stake in decisions regarding the ocean environment. Marine scientists study the environment. The fishing and ocean recreation industries are economically dependent on a clean ocean environment. Ocean miners' costs are affected by environmental rules and regulations that alter their mode of operation. Similarly, navigational costs (and thence costs of goods shipped) are affected by regulations on design and construction as well as operations at sea. Military uses of the oceans may also be affected by environmental measures.

Preservation of the marine environment is one of many goals being sought in the oceans. The environmental interest has, therefore, had to compete with other ocean users and interest groups in the formulation of ocean policy. Prevention of marine pollution will not be accorded priority over other interests unless or until there is compelling scientific evidence that the oceans are seriously endangered. The evidence at present is inconclusive. Most scientists acknowledge that while open ocean pollution is measurable, it does not pose an immediate threat to mankind.[5] They are less sanguine about the future, however, In a situation of such uncertainty, the cause of protecting mankind from the consequences of irreversible damage to the oceans is not advanced by doomsday predictions. Indeed these may have the effect of the boy who cried "wolf"—leaving a jaded public inattentive to real dangers if they should arise. It is important, therefore, for the Government, assisted by qualified segments of the private community and international organizations as appropriate, to begin funding and coordinating research oriented toward monitoring the condition of the marine environment. It is equally important that this information be translated into appropriate policy. The difficulties of achieving this goal can be illustrated by a consideration of the current policy-process.

U.S. Policy Process for the Marine Environment: IMCO and LOS III

The preservation of the marine environment is on the agenda of the Third U.N. Conference on the Law of the Sea (LOS III) and has been under consideration by the Intergovernmental Maritime Consultative Organization (IMCO) over a period of years. In these multilateral negotiations, ocean pollution has developed as a foreign policy issue for the U.S. A closer examination of how the U.S. Government formulates environmental policies for these negotiations indicates (1) the problems involved in the rational management of the marine environment, (2) the difficulty of coordinating and setting priorities among disparate interests, and (3) the absence of long-range planning in this area.

The overriding purpose of IMCO has been the supervision of matters related to international shipping. Established in 1959, its activities in the area of ocean pollution have been limited and generally taken in response to environmental mishaps. Within IMCO, environmental considerations are never separated from navigation. This has continued to be the case in its newly formed Marine Environment Protection Committee (MEPC).[6] The Third U.N. Conference on the Law of the Sea is a political negotiation concerned with the allocation of legal rights in the oceans between coastal and other states. "Preservation of the marine environment" is only one of twenty-five agenda items which are being considered.[7] It was put on the Conference agenda in 1970 at the insistence of the Canadian government. It was linked to the issue of coastal state rights in extended areas of jurisdiction and has, therefore, become a source of conflict between states wishing to exercise coastal state jurisdiction and other states seeking to protect high seas freedoms and navigational mobility.

Further complicating the picture for the marine environment in both IMCO and LOS III have been developing country concerns. On the one hand developing nations oppose international standards that might be economically costly or restrictive of development. On the other hand some developing nations with growing maritime fleets have recently become apprehensive at the prospect that developed coastal states might set vessel-construction standards or establish other regulations in their offshore zones which only the developed countries could afford to observe.

These international considerations have been directly responsible for the content and structure of the marine environment policy process within the

[5]Knauss, *op. cit.*, p. 1.

[6]The MEPC was established by IMCO resolution in November 1973, met in March and November 1974, and will hold a third meeting in June 1975.

[7]U.N., Third Conference on the Law of the Sea, (A/-CONF.62/29) 2 July 1974.

"Item 12: Preservation of the marine environment

12.1 Sources of pollution and other hazards and measures to combat them

12.2 Measures to preserve the ecological balance of the marine environment

12.3 Responsibility and liability for damage to the marine environment and to the coastal State

12.4 Rights and duties of coastal States

12.5 International co-operation"

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U.S. Government. The fact that the environment was introduced into the Law of the Sea Conference as a question of coastal state versus flag state jurisdiction is apparent in the United States reaction to and treatment of environmental controls as potentially restrictive of navigation. Were the marine environment per se an object of concern in these deliberations, greater attention would have been given to land-based sources which constitute the major component of ocean pollution. Instead, at LOS III, land-based sources are merely being referred to in a treaty article which states a general obligation of states to protect the marine environment from pollution.[8] Ocean sources of pollution have been considered in more detail since they represent additional forms of ocean jurisdiction to be allocated in the negotiating process.

The deficiencies in the IMCO- and LOS III-related policy processes occur at different points in the structure of decision-making. At the first level, there are the problems of communication between those who must generate policy-relevant research and those who must translate that research into appropriate policy. At the second level, there are problems of coordination between actors within the U.S. Government. And at the third level are the difficulties of communicating U.S. policy effectively in international institutions.

In formulating U.S. Government policy for IMCO negotiations such as the 1973 Conference, the Coast Guard has been the lead agency—in part because of its primary role in generating research and information. IMCO negotiations are generally more technical than those of Law of the Sea, reinforcing Coast Guard primacy vis à vis other agencies such as State or the Environmental Protection Agency. The Coast Guard orientation, however, in its research is understandably biased toward its mission. Hence, it never considers any proposal for abatement of ocean pollution in terms distinct from the engineering costs and effects on shipping. Long-range environmental forecasting is not among Coast Guard considerations.

In the law of the sea process, representatives of environmental agencies and private interests are lawyers, for the most part, not scientists. They are more attentive to the process of conducting business in an adversary setting than to substantive data on ocean pollution. Of prime concern, for instance, is what kind of environmental controls the military or shipping interests will accept or what the added cost to navigation might be of certain types of regulation. The result is a significant gap between the scientists in environmental agencies attentive to data on conditions of pollution and the lawyers in the same agencies. These lawyers are frank to acknowledge that they find the scientists "unresponsive to policy needs" and generally more attuned to esoteric research. A central official in the State Department has indicated that he does not even know what kind of environmental data he would like to have to facilitate decision-making on ocean pollution, if it could be supplied.

The problem therefore with regard to generating policy relevant data is not that there is no informed and articulate constituency for the marine environment. Rather it is that the constituency is somewhat diffuse (the public welfare) or is fragmented by communications problems between those who must generate information (scientists, engineers, economists) and those who must convert it into policy and sell it (the advocates) nationally and internationally.

At the second level in the structure of the decision process are the problems of organization and functioning within the U.S. Government. Communication and coordination among Government agencies has been different with regard to LOS III. Since 1973 U.S. law of the sea officials have tried to coordinate marine environment policies in both international forums. Indeed they have endeavored to move the issue of vessel-source pollution from the highly politicized law of the sea discussions into the more congenial and technical atmosphere of IMCO via the creation of the Marine Environment Protection Committee.

In LOS III (and consequently in the U.S. Government) the decision-making process has been political and adversary in nature. The environment is simply one of many ocean interests. Within the Government, the official mechanism for coordinating policy for the Law of the Sea Conference has been the National Security Council InterAgency Task Force on Law of the Sea. Thirteen government agencies are represented on the Task Force. Some are predominantly coastal in orientation, others are maritime, and still others are a mix of both.[9] Each agency has adopted a position on the environment consistent with its overall orientation and perceived interests. The Defense Department opposes coastal state pollution control zones while at the same time seeking exemption from international standards for military vessels. (Although military vessels have consistently been granted sovereign immunity in international conventions, Defense retains a generalized concern for navigational

[8]The "Draft Environmental Impact Statement: Third U.N. Law of the Sea Conference" prepared within the U.S. Government is frank in acknowledging that "a general obligation would have virtually no environmental impact," but that "there is no plausible hope of negotiating a Law of the Sea Convention which includes more than a general obligation with respect to land-based sources." pp. 6, 10.

[9]For a complete listing of U.S. agencies concerned with marine environment and their functions, see Annex A.

and high seas freedoms of all ocean-going ships.) The Department of State prefers international standards but is willing to partially accommodate strong sentiments favoring coastal state jurisdiction. The Interior Department is anxious to facilitate oil transport while assuring coastal state control of the resources of the margin. The Department of Transportation is concerned with the Coast Guard's anti-pollution enforcement responsibilities as well as with shipping. The Treasury raises questions as to the economic effects of international as opposed to coastal state standards on the costs of transport and the prices of goods to be shipped. The Environmental Protection Agency and Council on Environmental Quality support international standards for pollution as well as port state and coastal state rights to set and enforce higher standards in offshore zones.

The State Department (D/LOS) chairs the Inter-Agency Task Force and heads the U.S. delegation to the Law of the Sea Conference. Due to the large number of politically powerful interests, State's role is largely one of coordination and ensuring that policy is consistent with other U.S. foreign policy goals. Under its leadership the InterAgency Task Force must reach agreement on instructions to the delegation which in turn undertakes to negotiate them internationally. Given the number of divergent interests, this is no easy task. The Task Force meets once a week on an average, but more frequently when preparing for a negotiating session. When agreement has not been possible at the bureaucratic level or if the imprimatur of higher officials is sought, decisions have moved to the Under Secretaries Committee within the NSC system or, on occasion, to the White House. The Under Secretaries Committee has been called on to review law of the sea decisions or resolve differences in 1970, 1972, 1973, 1974 and 1975. None of these meetings has focused on the marine environment.

The one occasion when the environment was the object of contention between agencies is illustrative of the position environmental considerations occupy in the negotiating context. The dispute arose in 1973 in the course of preparing instructions for the Summer session of the Seabed Committee and the October meeting of IMCO. The protagonists were the Departments of Defense and Treasury. Defense supported exclusive international environmental standards to protect the national security interest in navigational mobility. Treasury argued on the grounds of economic efficiency that coastal state property rights over ocean resources, including the environment, needed to be established. A brief procedural skirmish occurred during IMCO discussions that reflected these substantive agency differences. Under Secretary of State Kenneth Rush was finally called on to intervene. At no point was the issue of ocean pollution per se under consideration. Instead, the warring perspectives were economic and national security considerations and resolution was sought through the adversary procedures of the NSC system. A by-product of the confrontation was the inclusion of the environmental agencies in the law of the sea negotiations from 1973. Environmental agencies were added to the Task Force to diffuse the primacy of other agency actors. A representative of the Council on Environmental Quality appeared at law of the sea negotiations for the first time in the summer of 1973 and Environmental Protection Agency representation on the delegation occurred for the first time at the Caracas session of the Law of the Sea Conference in 1974.

Another result of this policy dispute was to thenceforth link decision-making for IMCO negotiations to that for the Law of the Sea Conference. Before 1973 the Coast Guard had a freer hand in preparing positions for IMCO meetings. Once linked to the law of the sea process, however, that freedom was somewhat, although not wholly, circumscribed. Established in 1959, IMCO was very active in the elaboration of international marine pollution conventions by the 1970's. These negotiations were largely technical and with a high proportion of representation by specialized maritime bureaus and the Coast Guards. By the 1973 IMCO Conference, State Department and EPA participation had grown substantially but Coast Guard remained the lead agency for the United States.[10] Also by 1973, the link between the IMCO and law of the sea negotiations was apparent in the fact that there was an eight member overlap between delegations.[11]

Within law of the sea, on the other hand, relatively little had been done on ocean pollution prior to 1973. Although "preservation of the marine environment" had been put on the agenda of the Seabed Committee as early as 1970, the Seabed Committee was not prepared to address substantive issues until it had agreed on an elaborate agenda and a structure of subcommittees. This occupied most of the 1971 and 1972 sessions. The United States made no policy statement on the marine environment until the summer of 1972. Until 1971 U.S. law of the sea officials focused on fisheries, straits and seabed issues to the exclusion of environmental matters. Then in 1971 the Legal Advisor's office appointed a lawyer to devote full time to environmental matters. The general sentiment, however, was to defer action on environment in the

[10]Of 31 members of the Executive branch only nine were from EPA and CEQ. Of course this compares favorably to the ratio at the Caracas LOS III session of five environmental agency representatives out of an Executive branch total of 55.

[11]See Table 1.

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law of the sea meetings until the completion of the 1972 Stockholm and 1973 IMCO Conferences.

An interagency coordinating group for the marine environment developed after 1972 as an informal subgroup of the Interagency Task Force on the Law of the Sea. The group is chaired by the environment officer from the Legal Advisor's office in the State Department. When a new issue arises, such as the recent one on double environmental standards for developed and developing countries, the group is convened to discuss the problem. The group also meets to plan overall strategy and before bilateral and multilateral negotiations. Interested agencies that have sent representatives to these meetings have been the Council on Environmental Quality, the Environmental Protection Agency, the Coast Guard, the Department of the Interior, the Federal Energy Agency and the Department of Defense. Officials on the group are lawyers for the most part. The agency composition on the environmental group has varied over time and depending on the issue at hand. Based on the discussion, the State Department or the CEQ representative writes a policy paper which is reviewed by members of the group and proceeds to the whole Task Force and to its Executive Group for further consideration. Some agencies have involved themselves in this policy process for tactical reasons rather than reasons directly pertaining to the issue. That is, an approach taken in the area of environment may be advanced by an agency in order to facilitate a compromise in another area of particular interest to it. Moreover, as noted earlier, the decision process regularly links environmental to navigational considerations.

While this coordinating mechanism has worked effectively in preparation of law of the sea policy, there have been occasional problems in governing

TABLE I.—DELEGATES REPRESENTING U.S. AT BOTH INTERNATIONAL CONFERENCE ON MARINE POLLUTION (IMCO), 1973 AND THIRD UN CONFERENCE ON THE LAW OF THE SEA, 1974

	IMCO, 1973 (total delegation of 46)	*LOS III, 1974 (total delegation of 112)*
Russell B. Train Administrator, EPA	Chairman of Delegation Representative	Alternate Representative
Bernard H. Oxman Asst. Legal Adviser for Ocean, Environ. & Scientific Affairs Dept. of State	Alternate Representative	Alternate Representative
Paul A. Yost, Capt. USCG Spec. Asst. for LOS Dept. of Trans.	Adviser	Alternate Representative
Stuart P. French Director, LOS Task Force, ISA	Adviser	Alternate Representative
David B. Cook, Off. Gen'l Counsel, CEQ	Adviser	Adviser
Terry L. Leitzell Office of Legal Adviser, State Dept.	Adviser	Adviser
Robert J. McManus Office of Int'l Activities, EPA	Adviser	Adviser
Sidney A. Wallace, Capt. USCG, Trans.	Adviser	Adviser
Hon. Warren G. Magnuson U.S. Senate	Congressional Adviser	Congressional Adviser
Hon. Claiborne Pell U.S. Senate	Congressional Adviser	Congressional Adviser
James P. Walsh Staff, Senate Commerce Committee	Congressional Staff Adviser	Congressional Staff Adviser
David Keaney Staff, Senate Foreign Relations Committee	Congressional Staff Adviser	Congressional Staff Adviser

the activities of the operating agencies traditionally active in IMCO. For instance, the Coast Guard's application of the 1973 Convention's regulations to coast-wise trade was taken without cognizance of its impact on the overall U.S. foreign policy position in the law of the sea. In such situations, the Department of State has been relatively powerless.

The contribution of each agency to the decision process varies from agency to agency depending upon such variables as the informal relations within each agency, the capabilities of its law of the sea representative, his rapport with other members of the group, and so forth. The agencies vary, of course, in size and scope of their ocean pollution activities. Although CEQ is a relatively small operation and relatively new to law of the sea, its representative is active in the environmental group. National Oceanic and Atmospheric Administration (NOAA) representation in the area of marine environment is reduced by the scope of NOAA interests. Its representative must monitor a number of issues before the Task Force and is spread very thin. The Coast Guard, on the other hand, has a focused enforcement responsibility plus sizeable staff and technical and engineering expertise. Coast Guard information, of course, is biased by its position in the Department of Transportation and an institutional concern with shipping interests. The information, therefore, that it has generated, particularly for the 1973 IMCO Conference, has focused on the costs to shipping of improvements in vessel construction and engineering design. Environmental benefits are, of course, difficult to calculate. The EPA which might logically be the provider of such information, is plagued with organizational confusion and an apparent distance between its marine environmental research office and its law of the sea representatives.

The National Science Foundation has been surprisingly inactive in LOS III on the subject of the marine environment despite the mandate of its International Decade of Ocean Exploration (IDOE) program. IDOE's responsibilities in the area of marine environment include (1) assessing and predicting modifications of the oceans, (2) identifying damage or the irreversible effects of waste disposal, and (3) comprehending the interaction of levels of marine life. Although IDOE has been sponsoring research needed in these areas, it has not yet developed the capability to translate the results into socially useful policy prescriptions for law of the sea.

Finally, it should be noted that there is no sustained congressional role in the decision-making process on the environment. The few senators attentive to this issue reflect their ecology-oriented constituents, and congressional input is therefore divided between environmental and other constituent interests.

Perhaps most striking about the decision process in the marine environment is the absence of a continuing input of information on the state of the environment itself. The Environmental Impact Statement prepared for the Third U.N. Law of the Sea Conference is notable in this respect. The statement reflects the fact that policy on a number of issue areas such as coastal state rights and limits of jurisdiction, had been arrived at long before the need for an assessment of the environmental consequences was perceived.[12] As a result, it reads like an environmental justification of the preexisting policy positions. Agencies concerned with a particular law of the sea issue apparently undertook the task of assessing the environmental impact of their preferred policies and the results were predictable. Scientific information on the effect of ocean pollution is not absent from the statement. However, it is generally inconclusive in nature and no effort is made to link it to policies advocated. This gap reflects the inability of scientists to generate environmental data that is policy relevant or the inability of environmental lawyers to perceive the policy relevance of the mass of scientific data that exists. Under present circumstances, therefore, a regular input of environmental data into the process is unlikely. Indeed, law of the sea lawyers are emphatic that more information is unnecessary and unwarranted and that the task at hand is to negotiate presently agreed policy positions in the international forum. The dynamic of the negotiation is thus the preoccupying consideration at present.

A discussion of the decision-making process regarding the marine environment would be incomplete without consideration of the new Bureau of Oceans and International Environmental and Scientific Affairs (OES). The Bureau absorbed functional offices already in existence in the Department of State and has gradually been expanding its responsibilities. Four deputy assistant secretaries of State deal with Oceans and Fisheries Affairs, Environmental and Population Affairs, Scientific and Technological Affairs, and Nuclear and Energy Technology Affairs. The office of Oceans and Fisheries affairs has taken over the responsibilities of the Special Assistant to the Secretary for Fisheries and Wildlife and Coordinator of Marine Affairs. To date the new Deputy Assistant Secretary for Oceans

[12]Like the environmental agencies, private environmental groups were relatively late getting into the law of the sea act. When a public Advisory Committee on Law of the Sea was created in 1972, it was due to industry pressure. Eight subcommittees were included, one of which, for good measure, was to concern itself with marine environment. Since there had been no public pressure for an environmental representation on the Advisory Committee, there were only two members appointed. Although environmental groups have become far more attentive to law of the sea, the subgroup remains one of the smallest with only four members.

has spent a major portion of his time on bilateral and multilateral fisheries negotiations. The functions of the special office (D/LOS) that has been managing the InterAgency Task Force on the Law of the Sea will not be absorbed into OES until the conclusion of the Geneva session of the Law of the Sea Conference.

Within OES, the marine environment issue falls to the Office of Oceans and Fisheries rather than the Office of Environmental and Population Affairs. This allocation of responsibility was established before OES was created and simply carried over. The Legal Advisor's specialist on environmental affairs acts as counsellor to the Office of Oceans and Fisheries. He is responsible for coordinating law of the sea environmental impact statements, general interagency coordination, preparing policy statements and representing the United States in the Third Committee of the Law of the Sea Conference.

At this early stage it is difficult to project the evolution of the decision-making process for the marine environment within OES. The Bureau is hampered by limited resources and perhaps by high level inattention within a regionally oriented agency. Problems of coordination must be worked out between the several divisions of OES, each of which is responsible for activities that influence the marine environment. And finally OES must develop a capability to oversee, coordinate, and negotiate internationally U.S. foreign policy in a number of functional areas. The ability to operate effectively within the context of functional international organizations is an important priority. Equally important, assuming such conferences continue to be the norm, is the capability to operate within large conferences that are ostensibly functional, yet highly politicized.

International Institutions

The international organizations and institutions dealing with ocean pollution are numerous and increasing.[13] Their functions, however, are limited—to information gathering and facilitating the establishment of international norms or standards. These functions are not being expanded with notable speed. The development of international standards and codes of behavior in the form of international conventions has progressed gradually in response to environmental catastrophes such as the grounding of the Torrey Canyon. Efforts to consider ocean pollution on a global basis are relatively recent. The first serious attempt to deal with marine oil pollution was the 1954 International Convention for the Prevention of Pollution of the Sea by Oil (subsequently amended in 1962, 1969, and 1971). Since then, the Intergovernmental Maritime Consultative Organization has undertaken other measures to control marine pollution from shipping: (1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties; 1969 Convention on Civil Liability for Oil Pollution Damage; 1972 Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter; 1973 International Convention for the Prevention of Pollution from Ships.) In November 1973 the Marine Environment Protection Committee was established under IMCO and took over environmental responsibilities formerly handled in the Marine Safety Committee.

A technically oriented organization, IMCO has gone beyond the role of information gathering to that of facilitating legislation of standards and norms. However, IMCO has no significant in-house capability to generate data or to monitor the ocean environment. It relies instead on national governments and agencies, such as the Coast Guard, for policy-relevant research. Nor does IMCO have authorization to legislate or regulate environmental controls independently of its member governments. Its role remains purely facilitative, even within its Marine Environment Protection Committee.

Other international activities pertaining to ocean pollution have had as a focal point the United Nations Conference on the Human Environment which met in Stockholm in 1972. With regard to marine pollution, Stockholm approved a number of recommendations for international action: that attention be given to the Global Investigation of Pollution in the Marine Environment (GIPME) and the Integrated Global Ocean Station System (IGOSS) —data generating systems under the "Earthwatch" program of the U.N. Fund on the Environment; that a series of principles on marine pollution control be considered by IMCO and the Law of the Sea Conference; that governments conclude the draft Convention on Ocean Dumping, implement existing IMCO conventions, and develop new conventions through IMCO or LOS III; and that a number of other efforts be made. Response to these proposals has been proceeding on a number of fronts, including IMCO and LOS III.

As noted above, marine environment questions have been consistently linked to and must compete with other interests. Preservation of the environment within the context of the 1973 IMCO Conference was addressed in terms of changing ship design and equipment standards and of establishing

[13]No effort is made in this section to present a comprehensive history of international organization activities in marine pollution. A list of international organizations dealing with marine environment is included in annex B.

regulations affecting the safety and conduct of navigation in the world oceans. Also at issue were the costs of establishing international standards and regulations that might not fall evenly on the developed and developing countries or on the maritime and coastal nations. Within the Law of the Sea Conference, as has been noted, preservation of the marine environment is one of twenty-five agenda items. The focus of that negotiation is the allocation of legal rights in the oceans among coastal nations and the international community. Ocean pollution is dealt with as one of several types of jurisdiction or legal rights to be traded off against other rights.

The situation with regard to the marine environment, therefore, is that both nationally and internationally it is dealt with in a zero-sum negotiating process. Actions proposed to reduce ocean pollution entail costs in other areas. Although nations may in fact be interdependent with regard to protection of the environment, they are not sufficiently alarmed over the prospect of environmental degradation to adopt a cooperative approach. If compelling information were available that the level of ocean pollution at any given point would become irreversible, the zero-sum approach might be abandoned. While there would doubtless be skirmishes over which nations would bear what costs of pollution abatement, perceived mutual self-interest would supply the sense of urgency needed to surmount these difficulties. Unfortunately, neither the information on the marine environment needed to establish such a critical point nor the capability to gather and utilize such information exists. It is conceivable therefore that the point of irreversible degradation of the global ocean could be approached and yet not be known.

Implications for the Organization of the U.S. Government

Few compelling implications emerge from the foregoing analysis for the organization of foreign policy making *vis-à-vis* ocean pollution. The present process has both strengths and weaknesses. Clearly it is a very democratic process in that the interests of all affected by environmental decisions are factored into the policy process. At the same time this has the disadvantage of all such adversary processes, namely that long-range planning is not undertaken. Ocean users, like all interest groups, perceive their present interests as vital and their future planning relates to improving their situation in legal or economic terms. Technological change and the growth in the world population and in pressures on a finite ocean environment are not taken into account. It would be wise therefore to establish somewhere in the government, possibly within NSF's IDOE, the responsibility for long-range global monitoring of the condition of the ocean environment.

Informal coordination among agencies works seemingly to the satisfaction of most agency actors. There is some dissatisfaction with Coast Guard dominance in IMCO's environmental deliberations. This might be balanced by enhancing the research capabilities of EPA and the responsibilities of IDOE to produce environmental information useful to the policy maker.

The problem would undoubtedly remain in both IMCO and LOS III of translating scientific information into policy acceptable to a "fact-resistant" legal-political decision-making process. In this respect OES could play a useful role. In addition to managing the foreign policy impact of activities of U.S. technical agencies, OES should coordinate the policy process in a manner that assures technical-scientific input on all sides of the issue. This would call for in-house OES scientific expertise but not necessarily for its own research capabilities.

The major possibilities for change in the decision-making process on the marine environment await the conclusion of the Law of the Sea Conference as well as the development of OES capabilities in this area. While environmental decisions may never be free of other considerations, the post-LOS III atmosphere might allow some issues to be disentangled and handled on their own merits. This would probably be beneficial to decision-making on the marine environment. On the other hand, even handled in isolation from other issues, transaction costs of negotiating international environmental measures will necessarily be high. This is due to the large number of parties affected by ocean pollution and efforts to control it, the difficulty of assigning rights and duties in this area, and the importance attached by states to their sovereign prerogatives.

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ANNEX A.*—

U. S. GOVERNMENT AGENCIES ENGAGED IN MARINE ENVIRONMENTAL ACTIVITIES

A. THE EXECUTIVE BRANCH

1. Department of Commerce

a. *Task Force on the Law of the Sea*
(This group headed by the Deputy Administrator of NOAA formulates the Department's position with respect to the law of the sea, including marine environmental problems related thereto. This group then relies on the specialized agencies within NOAA for technical information and data.)

b. *Maritime Administration*
—Environmental Activities Group
(Engages in trying to prevent intentional or accidental pollution from shipping activities. The office also oversees the subsidization of construction of merchant ships which have special anti-pollution equipment. This office occasionally files environmental impact statements on tanker construction programs with the CEQ. The office employs four professional engineers.)

c. *National Oceanic and Atmospheric Administration*
—Office of the Associate Administrator for Marine Resources
(Handles technical aspects of international environmental affairs such as those sponsored by the World Meteorological Organization, UNESCO, IGOSS, IMCO.)
—Office of the Associate Administrator for Environmental Monitoring and Prediction.
(Put together marine monitoring programs associated with offshore oil development, deep sea ports, etc.)
—Office of International Affairs
(Handles non-scientific aspects of the agencies' involvement in international cooperation and organizations.)
—Office of Ecology and Environmental Conservation
(Special Staff Office composed of three scientists (oceanographer, biophysicist and a geologist) not involved in international environmental affairs but special conservation problems such as those of marine mammals and coastal conservation.)
—The special agencies
(NMFS, NOS, NWS, EDS, NESS, ERL) which each handle specific aspects on the technical operational level and may get involved with marine environmental problems at that level. Their vast staff of several thousand people is mostly highly trained scientists and specialists in the respective fields the agencies deal with.

2. Department of Defense

a. *Department of the Navy*
Office of the Chief of Naval Operations
—Deputy Chief of Naval Operations for Logistics
Environmental Protection Division
(Incorporates all field activities on land that are related to pollution reduction efforts.)
Three Subdivisions
—Shore Activities
—Air and Ships
—Environmental Impact Statements
(The first two subdivisions provide guidance with respect to pollution abatement, the third assesses and evaluates EIS's.) The division employs four professionals, of which two are engineers, one an industrial hygienist and one a general scientist.
—Naval Facilities Engineering Command
Environmental Protection Division
(A technical working-level division engaged in fighting pollution related to shore facilities. Has headquarters in Washington and six engineering field offices throughout the country. The divi-

*This list, compiled by Geir Haarde, Research Assistant to Dr. Ann Hollick, is subject to revision as new information develops. It is based on the U.S. Government Manual 1973/74 as well as information obtained from various officials at the agencies involved.

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sion employs 15 professionals mostly engineers and specialists in related areas.)

—Oceanographer of the Navy
Environmental Quality Division
(Coordinates work with other naval divisions involved in environmental problems and the naval laboratories in the field. The office employs four people at the professional level, two of which are oceanographers, one a meteorologist and one an engineer.

b. *U. S. Marine Corps*
—Facilities Branch
Real Property Maintenance Activities Section
(Has two professionals (engineers) working on pollution abatement and some marine environmental problems. This organization has its headquarters in Washington and field offices in various Marine Corps facilities in different parts of the U.S.)

3. Environmental Protection Agency

a. *Office of International Activities*
(Works on both bilateral and multilateral basis with other governments and the UN on coordination to prevent ocean pollution. Also handles U.S. relations with IMCO.)
—Oceans Division
(has two professionals, a lawyer and a political scientist.)

b. *Office of Water and Hazardous Materials*
—Oil and Hazardous Materials Control Division
(In charge of ocean dumping and incineration of water. Has control over oil spills occurring within the U.S. territorial sea (the U.S. Coast Guard handles spills occurring further away from land). Designates sites for dredging and filling. Issues permits for waste disposal from drilling operations on the outer continental shelf. Provides technical expertise to IMCO and reviews IES's.)
Five subdivisions:
—Marine Protection Branch
—Spill Prevention Control Branch
—Special Source Control Branch
—Contingency Planning and Emergency Coordination Branch
—Environmental Evaluation Branch
All together the division has 33 professionals, most if not all with technical backgrounds (sanitary and mechanical engineers, marine biologists, oceanographers, chemists, biologists. The division is run in close cooperation with the Coast Guard.)
—Office of Water Program Operation
(Responsible for overseeing municipal ocean outfalls.)
—Office of Enforcement and General Counsel
Office of Water Enforcement
(Responsible for industrial ocean outfalls, issuing permits, etc.)

4. Executive Office of the President

a. *Council on Environmental Quality*
(Undertakes policy analysis and recommends environmental policy to the president. The office also oversees the environmental impact statement process and in that capacity receives and analyzes such statements from other government agencies before they reach the president's desk. The office professional staff is composed of about 35 people of various backgrounds, including scientists, economists, lawyers and political scientists.)

5. Federal Energy Agency

a. *Office of International Energy Affairs*
(Has one person responsible for overall ocean policy including marine environmental problems. Another staff member follows environmental developments of international organizations such as the OECD and IEA. Both these professionals have political science background.)

b. *Office of Conservation and Environment*
—Environmental Programs Office
(One official in this office is responsible for following marine environmental problems related to petroleum development on outer continental shelf and also deep water ports, oil spills and related matters. Mixed background of biological and political sciences.)

6. Department of the Interior

a. *Bureau of Land Management*
—Branch of Marine Environmental Analysis
—Branch of Marine Minerals and Economic Analysis
(These two branches cooperate in preparing environmental impact statements on offshore drilling activities before the bureau leases outer continental shelf areas for development. The former branch has four field offices in addition to their Washington office and has in its employ about 100 professionals, physical and biological

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oceanographers, geologists, petroleum engineers, wildlife biologists, marine biologists, and urban planning specialists. The latter branch also employs a few economists.)

b. *U.S. Geological Survey*
—Conservation Division
—Geological Division
—Water Resources Division
(The Survey performs a regulatory function for offshore development once the Bureau of Land Management has leased areas for that purpose and is responsible for overseeing activities of drilling companies once they have their leases. In that context environmental impact statements are prepared, mostly by the Conservation Division but also with input from the other two divisions and possibly also the fourth division, the Topographic Division which is in charge of mapping and charting. Several hundred professionals are employed by the Survey: the largest part of those dealing with the marine environment are stationed in regional offices. Most of these are scientists, geophysicists, petroleum engineers, along with a few economists.)

c. *Office of the Assistant Secretary for Program Development and Budget*
—Office of Environmental Project Review
(Performs coordinating function between the different offices engaged in environmental related activities within the department and special task forces that may be set up with representatives from most bureaus of the Department to look into environmental problems associated with offshore drilling. This office evaluates environmental impact statements from other offices before they are passed on to the Secretary's office and makes sure that the analyses are up to standards and that all aspects have been taken into account. The office has 14 professionals from a wide range of disciplines working on this, including marine biologists, mining and sanitary engineers, recreation specialists, and economists.)

d. *Office of the Solicitor*
(Has a group dealing with matters related to law of the sea and marine environmental questions of a legal nature. Reviews environmental impact statements submitted from the bureaus to verify accordance with the letter and the spirit of the law.)

e. *Office of the Assistant Secretary for Energy and Minerals*
—Ocean Mining and Development Office
(Handles LOS negotiations for the Department and in that context deals with marine environmental questions.)

7. National Science Foundation

a. *Office of the International Decade of Ocean Exploration*
(This office supports U.S. federal and nonfederal participation in the U.N. IDOE program in selected major oceanographic research efforts in the four main IDOE program categories of environmental quality, environmental forecasting, seabed assessment and living resources.)

8. Department of State

a. *Bureau of Oceans and International Environmental and Scientific Affairs*
—Office of Marine Science and Ocean Affairs
(Responsible for: (1) the management of United States participation in several intergovernmental organizations active to some degree in marine pollution control; (2) management of United States participation in the negotiations of international agreements or treaties designed to curb marine pollution; (3) direction of U.S. Government federal agencies' cooperation with counterpart agencies in other governments under various bilateral agreements.)

b. *NSC Interagency Task Force on Law of the Sea, D/LOS*
Responsible for coordinating United States participation in the U.N. Conference on Law of the Sea, including negotiations on marine environmental issues.

9. Department of Transportation

a. *U.S. Coast Guard: Office of Marine Environment and Systems*
—Marine Environmental Protection Division
(The Coast Guard is the nation's primary regulatory and enforcement agency in the field of marine environmental protection. Oil and hazardous substances are the pollutants of primary concern to the Coast Guard, but the service has responsibilities in other areas as well, e.g., ocean dumping, vessel sewage, and solid waste. The Marine Environmental Protection Program is managed by the Marine Environmental Protection Division within the

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Office of Marine Environment and Systems.

B. THE LEGISLATIVE BRANCH

1. United States Senate

a. Commerce Committee
—Environment Subcommittee
—Oceans and Atmosphere Subcommittee

b. Foreign Relations Committee
—Oceans and International Environment Subcommittee

c. Committee on Public Works
—Air and Water Pollution Subcommittee
—Environmental Science and Technology Subcommittee

d. Committee on Appropriations
—Agriculture, Environmental, and Consumer Protection Subcommittee

2. United States House of Representatives

a. Appropriations Committee
—Agriculture, Environmental, and Consumer Protection Subcommittee

b. Government Operations Committee
—Conservation and Natural Resources Subcommittee

c. Interior and Insular Affairs Committee
—Environment Subcommittee

d. Interstate and Foreign Commerce Committee
—Public Health and Environment Subcommittee

e. Merchant Marine and Fisheries Committee
—Fisheries and Wildlife Conservation and the Environment Subcommittee
—Oceanography Subcommittee

f. Science and Astronautics Committee
—Science, Research, and Development Subcommittee

ANNEX B.*—

INTERNATIONAL ORGANIZATIONS ENGAGED IN MARINE ENVIRONMENTAL ACTIVITIES

UNITED NATIONS ORGANIZATIONS

1. *Conference on the Law of the Sea.* The terms of reference for the Law of the Sea Conference are found in U.N. General Assembly Resolution 2750C (XXV) of 17 December 1970. The Resolution calls for the Conference to deal with "the establishment of an equitable international regime—including an international machinery—for the area and the resources of the seabed and the ocean floor and the subsoil thereof beyond the limits of national jurisdiction, a precise definition of the area, and a broad range of related issues including those concerning the regimes of the high seas, the continental shelf, the territorial sea (including the question of its breadth and the question of international straits) and contiguous zone, fishing and conservation of the living resources of the high seas (including the question of the preferential rights of coastal States), the preservation of the marine environment (including *inter alia,* the prevention of pollution) and scientific research.

2. *Economic Commission for Europe* (ECE). The Economic Commission for Europe is the sole intergovernmental forum in which only the industrialized countries of Western and Eastern Europe are represented. The ECE's May 1971 Prague Symposium advanced East-West environmental cooperation. This regional Commission of the U.N. has not yet included broad marine questions in its program of work. The ECE has taken an interest in water pollution since 1957 when it initiated a study identifying specific water pollution control problems. A Committee on Water Problems was created in 1968 and meets annually.

a. *Senior Environmental Advisors to ECE Governments.* A permanent ECE body which held its first meeting in the Fall of 1971.

3. *Fund for the Environment.* The U.N. Conference on the Human Environment 5–16 June 1972, Stockholm, approved forming a $100 million U.N. Environmental Fund, first proposed by President Nixon in February 1972.

*This list is based on a more extensive document compiled by the Office of the Oceanographer of the Navy, 1974, listing a variety of international organizations with interests in the oceans.

4. *Environmental Secretariat.* A new permanent organization will be established within the United Nations to coordinate international environmental activities. It will consist of an Executive Director who will head a small staff (the Environmental Secretariat) of about 30 persons. This organization will be supported by a Governing Council for Environmental Programs composed of representatives of 54 nations and will be under the United Nations Economic and Social Council. Its major outlays will be met by the $100 million U.N. environmental fund. The Environmental Secretariat will work in close association, perhaps even jointly, with the secretariats of the United Nations agencies and organizations dealing with marine pollution, including, in particular, the secretariat of IOC, the Department of Economic and Social Affairs (ECOSOC), and the Intersecretariat Committee for Scientific Programmes related to Oceanography (ICSPRO).

UNITED NATIONS SPECIALIZED AND AFFILIATED AGENCIES

1. *Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP).* The Group of Experts held its second meeting in Paris, March 1970. The group is sponsored by six UN agencies, all with an interest in marine pollution: FAO, UNESCO, IMCO, WHO, World Meteorological Organization and the International Atomic Energy Authority. The group is made up of a dozen "experts" drawn from the developed maritime countries that have been dealing with marine pollution for some time: Russia, North America, Japan, Scandinavia, Poland, Holland, France, and the United Kingdom. They are supplemented by representatives of the sponsoring agencies and observers from a number of international organizations, such as the International Council for the Exploration of the Sea (ICES) and the International Biological Programme (IBP), bringing the total number of participants to about thirty.

2. *Intergovernmental Maritime Consultative Organization* (IMCO). Since its establishment in 1959, IMCO has been the specialized agency of the United Nations concerned solely with maritime affairs. Its interest lies mainly in ships used in international services. Nearly seventy States are Mem-

bers of IMCO, including shipowning countries, nations which use as well as provide shipping services, and countries in the course of development. IMCO has an international responsibility for preventing and controlling oil pollution in the sea through the International Convention for the Prevention of Pollution of the Sea by Oil; the Organization also deals with problems of ship-caused pollution by agents other than oil; and is concerned with the safety aspects of ship design and operation, drilling rigs, buoys and other platforms used at sea.

On October 14, 1971, the United States deposited instruments of ratification of the 1969 Inter-Governmental Maritime Consultative Organization (IMCO) Intervention Convention and the 1969 amendments to the 1954 IMCO Oil Pollution Convention. These international agreements, respectively, authorize coastal States to take necessary measures to prevent, mitigate, or eliminate "grave and imminent" danger of oil pollution to their coastlines and to extend the areas of application and increase the stringency of all discharge standards in accordance with the 1954 Convention. The effect of these measures will be strengthened as a result of the international Convention on the Establishment of an International Compensation Fund for Oil Pollution Damage, negotiated by 49 countries in December 1971, to insure that full and adequate compensation will be available to victims of oil pollution incidents.

a. *Maritime Safety Committee.* The Maritime Safety Committee consists of representatives of sixteen Member States of IMCO. It is elected by the IMCO Assembly for a term of four years. In pursuance of U.N. Resolution 2414, the IMCO Assembly, at its sixth session (15–30 October 1969), instructed the Maritime Safety Committee to proceed with all possible speed to promote the early development of such international agreements as may be necessary for the prevention and control of marine pollution.

—*Marine Pollution Subcommittee,* under the auspices of the Marine Safety Committee, IMCO; The Chairman is Captain Powers, USCG, and includes CG, DOS, DOC (MARAD), EPA representatives. Usually holds two or three meetings per year in London. Preparatory meetings are held in the U.S. prior to the London meetings. Reports of Subcommittee meetings are forwarded to DOS. Mission to coordinate and control the pollution of the seas by oil and other noxious substances at the international level.

3. *Intergovernmental Oceanographic Commission* (IOC), was established within UNESCO in 1960 as a result of interest and experience generated by the International Geophysical Year and motivated in part by the desire of the oceanographic community to involve government support for international oceanographic cooperation. The IOC is open to all U.N. member states with its primary purpose to promote scientific investigation with a view to learning more about the nature and resources of the oceans. States pay for their own participation in the programs of the Commission: UNESCO furnishes Secretariat support, administration, coordination, and publications. FAO allocates a small sum from its budget to support fishery-related IOC projects. SCOR and FAO's Advisory Committee of Marine Resources Research (ACMRR) serve as scientific advisory bodies to the Commission.

In 1971 the IOC began its second decade under new statutes that substantially increased its authority and broadened its scope as the central coordinating point for marine science in the United Nations Organization. The new, more effective procedural rules strengthened its ties with UNESCO, FAO, WMO, and IMCO.

The IOC held its Seventh Biennial Session in Paris from October 26 through November 5, 1971. The Session made significant progress on the development of the IOC's Long-term and Expanded Program of Oceanic Exploration and Research (LEPOR) and the International Decade of Ocean Exploration (IDOE). The Global Investigation of Pollution in the Marine Environment (GIPME) was established as a major project of IDOE and LEPOR. The Session also adopted seven additional projects of major importance for LEPOR: a study of upwelling, including ocean-atmosphere interaction; a survey of living resources; coastal ecology and mariculture; morphological charting of the sea floor; systematic geological and geophysical surveys of continental margins; river discharge of sediments and alongshore transport; and physical research related to the Integrated Global Station System (IGOSS). Lastly in this area, the Session strengthened the role of IDOE as the acceleration phase of LEPOR for the period from 1971 through 1980. The IOC has also taken the first steps toward IGOSS by planning a 1972 pilot project for the collection, exchange, and evaluation of bathythermograph data.

4. *Coordinating Group for the North Atlantic.* An intersecretariat coordination group with no country membership designed to strengthen coordination of IOC programmes with other oceanographic programmes in the North Atlantic, comprised of ICES and ICNAF together with IOC. Present and planned investigations being coordinated by the IOC, ICES, ICNAF, WMO, ACMRR and SCOR including CICAR, CINECA, the Greenland-Iceland

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and Scotland overflow studies, the Georges Bank survey, Geotraverses, MODE, Geochemical Section Studies (GEOSECS) and the IGOSS Pilot project are, when viewed together, a major large-scale study of the North Atlantic Ocean.

5. *Cooperative Investigation of the Caribbean and Adjacent Regions* (CICAR). CICAR is a 15-nation scientific inquiry, initially proposed by the Netherlands, and under the sponsorship of the IOC with cooperation of the World Meteorological Organization and FAO, to collect oceanographic and meteorological data in the Caribbean Sea and Adjacent regions, including the Gulf of Mexico and the Atlantic Ocean southeast of a line from 30° N, 81° W to 15° N, 50° W, during the period from January 1970 to December 1972. The following countries participate: Brazil, Colombia, Federal Republic of Germany, France, Guatemala, Jamaica, Mexico, Netherlands, Panama, Trinidad and Tobago, United Kingdom, United States, U.S.S.R., Uruguay, and Venezuela. Data are collected on marine biology, geology, geophysics, physical oceanography, meteorology, and fisheries. Of prime scientific interest are: (a) circulation into, out of, and within the Caribbean and Gulf of Mexico; (b) ocean-atmosphere interaction; (c) marine chemistry; and (d) the water-sediment interface. It is hoped that this research will lead to improved weather forecasting and increased exploitation of mineral and biological resources in the area.

6. *Cooperative Investigation of the Mediterranean* (CIM). The IOC, the General Fisheries Council for the Mediterranean (GFCM) of the Food and Agriculture Organization (FAO), and the International Commission for the Scientific Exploration of the Mediterranean (ICSEM) established as a joint exercise the "Cooperative Investigations of the Mediterranean" (CIM). Two groups have been set up to coordinate CIM: The "International Group for Technical Coordination" (CTC) and the "International Group for the Scientific Coordination" (IGSC). The main objective of CIM is understanding the physical and chemical processes needed to establish predictive models for the Mediterranean. Specific investigations are carried out in the following fields: (a) values and distribution of physical, chemical, radio-chemical properties of Mediterranean waters; (b) effects of air-sea interaction; (c) spreading of water masses; (d) exchange in straits and sills; (e) variability, diffusion and exchange between water masses; (f) water circulation; (g) geochemistry of Mediterranean waters; (h) marine pollution; (i) coastal and inshore processes; (j) gravimetric, magnetic, bathymetric, and continuous seismic profiling surveys; (k) deep seismic reflection and refraction surveys in key areas; (1) deep coring; (m) study of the fisheries resources; (n) collection and study of flora and fauna. Mediterranean Marine Sorting Center (MMSC) is the official CIM sorting center. Areas of interest include the Eastern Mediterranean, Western Mediterranean, Black Sea, Tyrrhenian Sea, Aegean Sea, Ionian Sea, Levantine Sea, and the Red Sea.

7. *Cooperative Study of the Kuroshio and Adjacent Regions* (CSK). The CSK is an international cooperative study of the oceanography and fishery biology of a large part of the Western Pacific Ocean. The program is carried out under the auspices of the Intergovernmental Oceanographic Commission, UNESCO. Initial plans for the program were developed in 1963.

8. *International Coordination Group for the Southern Ocean.* The IOC established in 1967 an IOC Coordination Group for the Southern Ocean to consist of countries interested in Antarctic oceanographic research, and with observers from SCOR, SCAR, ACMRR, WMO and other interested organizations.

9. *Long-term and Expanded Programme of Oceanic Exploration and Research* (LEPOR). A special working group of the IOC met in Paris, 16–21 June 1969, and prepared a "Draft comprehensive outline of the scope of the [LEPOR]. Upon adopting the draft outline at the IOC Sixth Session, 2–13 September, 1969, the IOC gave as the purpose of LEPOR "to increase knowledge of the ocean, its contents and the contents of its sub-soil, and its interfaces with the land, the atmosphere, and the ocean floor and to improve understanding of processes operating in or affecting the marine environment, with the goal of enhanced utilization of the ocean and its resources for the benefit of mankind."

10. *International Decade of Ocean Exploration* (IDOE). Proposed by President Johnson on March 8, 1968, the IDOE was intended as an intense sustained program of international cooperation during the 1970's to explore the world's oceans for the benefit of mankind. In December 1968, the UN endorsed the IDOE concept and in Resolution 2414 called for proposals from member states on how best to implement the program. In November 1969, the National Science Foundation (NSF) was assigned lead agency responsibility for the planning, coordination, and management of the American contribution to IDOE. The IDOE at the international level was established by the IOC in 1969 as the acceleration phase of LEPOR. The initial funding year for the U.S. IDOE program was Fiscal Year 1971.

11. *Barbados Oceanographic and Meteorological Experiment* (BOMEX), an International/NSF study of air/sea interaction in the North Atlantic. Field effort completed 1969. Analysis of BOMEX data

continues. BOMEX provided opportunities for research leading to better understanding of the physical processes of the atmosphere and, eventually, for improving the numerical prediction models.

12. *Global Investigation of Pollution in the Marine Environment* (GIPME). At its seventh biennial session late in 1971, the IOC endorsed GIPME as a major IOC project under LEPOR/IDOE. Representatives from ACMRR, SCOR, ACOMR and GESAMP comprise the joint working party on GIPME. The purpose of GIPME is to provide the research base for planning pollution monitoring and control programs throughout the world ocean.

13. *Large Scale Ocean and Atmospheric Fluctuations in the Pacific* (NORPAX). An example of an environmental prediction project which holds high promise is NORPAX. This is a program of synoptic observations, which combined with theory, will provide the understanding of energy exchange between the ocean and the atmosphere. The long-range goal of the program is to provide the proper scientific basis for increasing our long-range weather forecasting both in the marine environment and over the North American continent. For the past five years, the Office of Naval Research (ONR) has been supporting a research program in the North Pacific to identify the processes responsible for the generation and decay of large areas of anomalously hot or cold sea surface temperatures in the ocean and large-scale air-sea interactions. Furthermore, it has been found that the air-sea exchange processes in the North Pacific influence the climate from the eastern Pacific, eastward across the entire North American continent.

14. *Ocean Data Acquisition Systems* (ODAS). IOC has asked the governments of the U.S.S.R., United States of America, Netherlands, Japan and the United Kingdom to designate experts in maritime law to help the IOC Secretariat prepare documentation dealing with existing national and international practices in data acquisition. The term "Ocean Data Acquisition Systems" was introduced to cover the ships, platforms, telemetering and nontelemetering buoys, used to gather data at Ocean Data Stations at nearshore manned stations, offshore manned stations, unmanned stations, and repetitive drifting stations.

15. *Integrated Global Ocean Station System* (IGOSS). IGOSS is a major marine monitoring and prediction program initiated by the IOC with the collaboration of the WMO. The purpose of IGOSS is to bring together a number of national systems to form, ultimately, a dynamic worldwide system for observing and measuring the marine environment. The initial pilot program for collection, exchange, and evaluation of bathythermograph data began early in 1972, using high-speed telecommunications systems set up under United Nations agreements, principally the Global Telecommunications System of the WMO World Weather Watch. The national data buoy system, and its related satellite relay systems, will be a major contributor to IGOSS.

16. *Working Groups on Education and Training in Oceanography.* IOC Working Groups met in Malta in January 1971. The IOC attaches great importance to training and education of marine scientists and technicians as the basis for the development of marine science research and for the effective utilization of the ocean and its resources for the benefit of all.

NON-U.N. INTERGOVERNMENTAL ORGANIZATIONS

1. *French-American Mid-Ocean Undersea Study (FAMOUS().* Project FAMOUS is one area of mutual United States-French scientific and technical cooperation in oceanography under the overall United States-French Agreement for Scientific and Technical cooperation. NOAA coordinates United States scientific and technical cooperation in oceanography with France. Responsible agency on French side is the National Center for the Exploitation of the Oceans (CNEXO). Project FAMOUS is one of seven areas of cooperation.

2. *International Council for the Exploration of the Sea* (ICES). Coordinates the oceanographic activities of its 17 member governments and other interested bodies, promotes research in the marine sciences, undertakes investigations of fisheries, plankton, and sea water, and seeks to establish the best basis for international conventions on the improvement of sea fisheries. To achieve these goals, it cooperates with FAO and UNESCO and with other international organizations specializing in marine sciences. The Council publishes a journal, bulletins, and reports; maintains a library and a small laboratory at Charlottenlund, Denmark and operates standard sea water service. The Council meets annually; it has recently expanded its scope to include the entire Atlantic Ocean. Founded in 1902, ICES is the oldest and probably most important organization concerned with the North Atlantic and adjacent seas. Member governments each appoint their national representatives to the Council and the national members of a number of standing committees dealing with scientific matters and with regional fish stocks. ICES serves as a regional data center through its Hydrographic Service, and compiles and distributes fishery statistics through its Statistical Service. Almost all oceanographic data from northern Europe reaching NODC/WDC-A is via ICES.

3. *Organization for Economic Cooperation and Development* (OECD).

a. *Environmental Committee* (OECD/ENV), combines technical expertise and substantial experience in economic policy analysis; it is particularly well suited for dealing with the economic implications of environmental problems, especially issues directly affecting the interests of the principal trading nations of the Western world. The OECD has a tradition of approaching problems broadly, yet keeping its efforts focused on courses of action designed to advance the economic development of its member states. Since its membership is wider than that of CCMS and it is not associated with a military alliance, OECD/ENV has certain advantages as an institution for advancing cooperation among major non-Communist nations.

NON-GOVERNMENTAL ORGANIZATIONS

1. *Scientific Committee on the Problems of the Environment* (SCOPE). The nongovernmental scientific activities concerned with environmental monitoring and research fall primarily under the umbrella of the International Council of Scientific Unions (ICSU). ICSU has been the international leader in the planning and formulation of monitoring programs needed for the future. ICSU has established the Scientific Committee on Problems of the Environment to act on its behalf.

2. *Scientific Committee on Oceanic Research* (SCOR). The Scientific Committee on Oceanic Research is the ICSU scientific committee charged with furthering international scientific activity in all branches of oceanic research. SCOR discusses and considers oceanographic problems, especially those of an interdisciplinary character requiring international cooperation, and prepares plans for international oceanic research programs. It cooperates with other international organizations dealing with scientific aspects of oceanic research. SCOR advises UNESCO and the IOC on marine science matters.

3. *International Ocean Institute* (IOI). The International Ocean Institute is a private, non-profit international organization for research and education. Its goal is the establishment of a transnational, intergovernmental body to administer the peaceful development and use of the oceans. The Institute commenced operations in association with the Royal University of Malta in 1972. The permanent institute will permit scientists, legal experts and specialists to focus their energies on the problems of the sea.

4. *Pacem in Maribus*—The international Pacem in Maribus convocations have taken place. These were held in Malta in 1970, 1971, and 1972. Subjects discussed were: (a) the economic potential of the oceans, (b) the pollution of the Mediterranean, (c) necessary conditions for the effective conduct of ocean research; (d) an ocean development tax; (e) a constitution for the oceans. A pilot project is underway examining the economic and ecological systems of the Mediterranean world. It will study the integration of existing institutions and propose the establishment, where necessary of new organizations.

Global Food Management: U.S. Policymaking in an Interdependent World

Raymond F. Hopkins
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Food is vital for human life. Yet it has not been of critical concern in international politics, at least not in recent decades. Thanks to growing global production, the direst predictions of Malthus have been avoided. In general adequate supplies have been available to relieve famine, and to support economic development. In recent years, however, the importance of food has grown sharply in contrast to the previous half century.[1]

After World War II the United States, as part of its price support system for domestic agriculture, begun during the depression of the 1930s, began to hold large stocks of food. These surpluses, which existed until 1972, had a number of salutary consequences, which like the unregulated use of air and water came to be taken for granted by those who benefited. The U.S. reserves promoted price stability for key commodities in the world market and provided food security for countries with occasional but serious domestic shortages.[2] Particularly in grain which can be stored and transported more easily than other foods, and which is basic to human diets, this security was important. The U.S. reserves may also have aided domestic and international consumers by keeping prices lower.[3] They certainly were the basis for massive U.S. food aid to less developed and famine-struck countries. From 1955 through 1972 22 percent of total U.S. agricultural exports were aid shipments under concessional and grant government programs—amounting to nearly $25 billion.[4] Thus U.S. food policies in the decades after World War II, while motivated principally by a desire to assist domestic producers, provided important benefits enjoyed by countries around the world at virtually no direct cost.[5]

Four factors catapulted food into the center stage of world politics after 1972. First, the relaxation of military tensions produced by detente increased the relative importance of economic affairs. Second, global interdependence in food production and distribution increased. Third, a tight supply situation led to high prices for all consumers and greater likelihood of malnutrition among the poor. Finally, drought in the African Sahel and poor crops in Asia created famine conditions of massive proportion. Each of these factors has brought increased pressure on governments over food problems. For instance, consumers have urged export

[1]Of course, malnutrition and famines have occurred, but in very limited terms compared to 75 years ago. Moreover, nutritional intake on the average seems to have improved globally compared to eighteenth century European levels. These points are made by D. Gale Johnson, "Population, Food and Economic Adjustment," paper no. 73:19, Office of Agricultural Economic Research, University of Chicago, December 7, 1973.

[2]Compare for example the smaller fluctuations in prices for wheat, corn, rice, soybeans, and course grains (held in reserve by the United States) to those in other agricultural commodities such as cocoa, coffee, and sisal during the 1950's and 1960's.

[3]The argument has been suggested that demand is more inelastic when reserves do not exist and that price rises in years of short falls in production (due to random climatic factors) would have been much greater if U.S. reserves had not existed. Roger Gray estimates that a six-tenth-billion-bushel shortfall of corn in 1971 increased the total crop earnings by $60 million, while the same sized short fall in 1974 resulted in a price rise that amounted to a $6 billion gain. See Roger Gray, "Grain Reserve Issues", U.S.D.A. National Agricultural Outlook Conference, Washington, D. C., December 9, 1974, pp. 7–8.

[4]See *U.S. Agricultural Exports Under Public Law 480,* Economic Research Service, U.S.D.A., October, 1974.

[5]The price supports and surplus storage (reserves) were an outgrowth of farm policies begun in the 1930s to help farmers. As Europe recovered from World War II and became self-sufficient in food, large surpluses were accumulated in the United States as the government guaranteed minimum farm prices by buying and storing excess crop production. Costs for this program came from general U.S. revenues and its costs and benefits were calculated almost entirely in domestic terms.

There may have been indirect overseas costs where U.S. food aid depressed foreign food prices or altered budget priorities away from agriculture. This reduced incentives to farmers and retarded agriculture development, especially in less developed countries.

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controls to prevent price rises, international agricultural exports have proposed new reserve systems, and advocates of food relief, because they encountered obstacles in both donor and recipient states, have leveled sharp criticism upon the responsible political institutions.[6] Food management has become a global issue, one in which domestic and international policies are inexorbally tied.

INTERNATIONAL INTERDEPENDENCE

While linkage between various countries' food production and consumption needs are the basis for interdependence, it is demand pressure that makes this issue area so important. In time of short world food supply, sensitivities increase. Small variations in physical and policy processes that are linked among countries create large disturbances. We need, therefore, to understand both the nature of interdependencies and the reasons why these links are critical, e.g., why demand exceeded supply in 1972–74.

The United States is essentially self-sufficient in food; it has for the foreseeable future the land, fertilizer, machinery, energy, and skills to grow far more than it can reasonably consume. Countries dependent upon imports can be divided according to the degree of their dependency and consistency of demand. Certain importing countries are virtually dependent on foreign agricultural production. Japan, for instance, except for rice, permanently counts on U.S. imports for its food supply. Most countries, while physically independent, are socially dependent, having developed relatively fixed consumption tastes dependent on imports. Imports of soybeans to Europe, for example, corn to Jamaica and coffee to the U.S. are examples of such socially dependent food transfers. These interdependencies are essentially economic in nature, predictable in size and based on international production efficiencies. Europe is better off importing some of its grain from the U.S. and exporting more manufactured goods.

Finally there are two classes of inconsistent, importing countries. Poor countries, such as India, Ethiopia, and Tanzania; with food production systems subject to adverse weather, social disruption, and growing domestic demand, are physically dependent intermittently. One or two bad rainfalls, a drought or efforts to transform agricultural practices can disrupt production to the point where malnutrition and starvation become imminent. While such countries are not regular in their demand for U.S. exports, their needs are so basic that humanitarian considerations, coupled with adequate grain surpluses, have ensured their most vital needs were met during previous shortfalls, most notably in the cases of the massive shipments for famine relief to India in the mid 1960's and the Sahel in the early 1970's. The last group of countries are those who enter the market intermittently on a commercial basis. The most dramatic case is the Soviet Union which in mid-1972, faced with a short wheat crop, entered world markets over the next year to purchase 28 million tons of grain rather than reduce its livestock feeding program. From exporting 8.6 million tons in 1970–71, the U.S.S.R. imported 28 million tons in 1972 and 1973.[7] Among exporters Canada has been consistent, while the United States, by drawing down its stocks, has been an irregular supplier. Table 1 below illustrates these various interdependent patterns with respect to the key crop, grains.

Although the U.S. stakes in global food distribution are largely economic in character, there are important political and humanitarian dimensions. The Soviet grain purchases in 1972 and subsequently those of the People's Republic of China were important components in the strategy of easing cold war tensions. Such trade was encouraged for the political ends of increasing the advantages each country had in peaceful relations with the other. The U.S., as Table 1 shows, was essentially the supplier of last resort to countries seeking above normal imports. As such, requests for humanitarian aid from peoples facing famine have fallen principally on U.S. shoulders. The U.S.'s record as a humanitarian food supplier over the last 20 years is extraordinarily good,[8] but the deeply entrenched expectations for the U.S. to continue in

[6]The collapse of the feudal regime of Haile Selassie of Ethiopia in 1974 was precipitated by the blatantly inadequate response of his government to famine. It was probably a factor in the coup in Niger. Food programs are a key political issue in India and Bangladesh.

In the U.S. famine relief programs have been the subject of much criticism, by voluntary agencies assisting in relief efforts and by scholars. See, for instance, Hal Sheets and Roger Morris, *Disaster in the Desert: Failures of International Relief in the West African Drought* (Washington: Carnegie Endowment for International Peace, 1974) and Jean Mayer "Coping with Famine", *Foreign Affairs* October, 1974, pp. 98–120.

[7] *The World Food Situation and Prospects to 1985*, Foreign Agricultural Economic Report No. 98 (Washington: Economic Research Service, December, 1974), p. 2. Russian maize (corn) purchases have been fairly consistent; their wheat purchases have been the principal source of instability.

[8]Figures from *Ibid.*, p. 4. Rice is excluded here in which Thailand and the U.S. would be the major exporters, with China an intermittent exporter. Arthur B. Mackie, in a regression analysis of trade data over time found the proportion of imports explained by trends high for "consistent" countries and low for others. The R^2s were: world (39), Japan (89), W. Europe (69), Latin America (37), while the low scores were USSR (03), PRC (01), South Asia (]07), See "International Dimensions of Agricultural Prices", *Southern Journal of Agricultural Economics*, July, 1974, p. 20.

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TABLE 1.—SELECTED NET IMPORT/EXPORT PATTERNS IN GRAIN: 1970-74 (MILLION METRIC TONS; – = IMPORTS)

	Importers				
	Consistent Trading States		*Inconsistent Trading States*		
	Dependency		*Dependency*		
	Physical	*Economic*	*Physical*	*Economic*	
Years	*Japan*	*Western Europe*	*North Africa Middle East*	*USSR*	*China (PRC)*
1969–71 Average	–14.4	–21.4	– 9.2	– 3.9	– 3.1
1971–72	–15.0	–18.5	–11.9	– 4.3	–15.4
1972–73	–17.0	–18.7	– 8.1	–19.6	– 4.6
1973–74	–19.2	–21.9	–14.9	– 4.4	– 6.7
	Exporters				
	Canada		*U.S.*		
1969–71 Average	14.8		39.8		
1971–72	18.3		42.8		
1972–73	18.8		73.1		
1973–74	13.1		72.5		

this role may be difficult to meet as long as reserves are low. Pressure from overseas and from domestic voluntary agencies based on positive images of the U.S. as an aid donor are serious factors in the climate of support for U.S. foreign policy generally. These can not be ignored, especially when human lives are at stake, even though providing assistance is not currently economically attractive.[9]

Interdependence in food is global in scope. Every major power now participates in grain trading with effects on its balance of payments and cost of living and potentially on its production. Poorer countries are linked not only by trade, to meet the threat of food shortages (the FAO's Early Warning system for food shortages covers some 70 Third World states),[10] but also by technological dependence upon agricultural research and supplies from developed countries. Vulnerability in food varies. The U.S. and other key exporters are vulnerable to the occasionally adverse impact of fluctuations in overseas demand-supply situations, but such vulnerability and the cost of adjusting to world variations could be reduced by export controls as were placed on soybeans in the summer of 1973. The negative effect of controls on producers and market maintenance has generally outweighed measures to protect domestic supplies in the United States; Europe, in contrast, has used its system of variable levies to protect its domestic market. And some countries with an occasional or continuing physical dependence on imports, such as India and Japan, are comparatively most vulnerable. In the short run both are subject to the potentially severe negative effects of high prices and food shortages.

Fortunately, interdependence in food need involve no zero-sum contests. Among major actors, including multinational firms, the effects of various circumstances and policies are mixed, and tend to activate disagreements within the country or firm. For instance, the high prices of food in 1974 helped contribute a $10 billion surplus to the U.S. balance of payments from agricultural trade (a good outcome), but also spurred domestic inflation and recession, the latter by reducing consumption among the poor who were most heavily affected by high food costs (a bad outcome). Alternatively, consider concessional sales to India. On the one hand they provide food vital to maintaining the Indian economy and government (a good outcome), but they also pile up long-term foreign debts on imports that yield little subsequent earnings and tend to postpone adjustments in the agricultural system

[9]This view was expressed by such diverse observers as Jean Mayer, the Harvard nutritionist, and Donald Paarlberg, Director of Agricultural Economics for the U.S. Department of Agriculture.

[10]Officials in the Department of State, e.g., Ambassador Martin, have argued that food aid, especially concessional sales, is basically fungible both to the United States and the recipient. As such they are inherently political and represent simply another way of giving aid to further diplomatic purposes. Agricultural Department officials, however, have cited the legal requirements that P.L.480 food aid not take the place of commercial sales and argue that humanitarian concerns are always present, although one official indicated this was more a wish than a reality ("I wish State and their political goals would go away"). In this situation, the United States or Saudia Arabian government could give food to needy countries by money grants just as well as by concessions to buy American food.

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in the economy, and in population control policies that might end India's chronic food crisis (a bad outcome). Finally, the large international grain traders have mixed stakes in food policy. One solution to shortages is a grain reserve system endorsed by the World Food Conference in November, 1974. The two largest dealers, Cargill and Continental, favor a reserve system. They envision one that would be held by private firms (who would be compensated by the government for their costs) and would permit stocks in normal channels to be counted as reserves. Cook, the third dealer, fearful of "political" decisions that would affect the market by depressing prices, opposes a reserve system. Generally, reserves are likely to mean greater security for grain traders (a good outcome) and lower average profit based on smaller price rises during shortages (a bad outcome). Such off-setting outcomes may pit one organizational division of government or firm against another. In the United States, for instance, the Agriculture Department tends to care more about high farm prices and large export earnings, the State Department about food aid and trade as diplomatic tools and the Treasury about high domestic prices. Since the United States has no central control over its market operations, either through a Wheat Board as in Canada or with state trading representatives as in Japan or the U.S.S.R., government managers of U.S. food policy have fewer policy tools and less consensus on objectives and valued outcomes than most foreign actors. So while the United States has preponderant resources and a secure position on food issues, it also has difficulty marshaling its resources to exercise its full influence.

THE INCREASE IN INTERDEPENDENCE

Interdependence in food has increased in the last few years for at least three reasons.[11] First, trade in grains, the single most important component of the world's food supply has increased as a proportion of production, although agricultural trade has generally declined in world trade (see tables 2 and 3). Since this has occurred even during the dramatic rise in the cost of energy imports, it underlines the importance of food imports to many economies.

[11]The EWS was established by the Director-General of the FAO in May, 1968, to aid the World Food Program and the FAO in planning food aid requirements. As of September, 1973, 18 Latin American, 12 Far Eastern, 14 Near Eastern, and 36 African countries were covered by this system. See Oris Wells, "Improving World Food Situation, Outlook Information and Analysis", Annex II, (New York: Ford Foundation mimeograph) pp. 1–6. See Annex to this paper.

TABLE 2.—WORLD GRAIN PRODUCTION AND TRADE: 1969-74 (MILLION METRIC TONS)[12]

Year	*Production*	*Consumption*	*Percent of Exports*
1969/70	826	839	12
1970/71	824	856	12
1971/72	911	893	12
1972/73	888	925	16
1973/74	970	960	16
1974/75	916	931	15

[12]From *The World Food Situation op. cit.*, p. 4.

A second reason for increased interdependence is that food production technology has become increasingly complex and dependent upon foreign resources. United States farmers and India's "Green Revolution" farmers both depend heavily on fertilizer and mechanized equipment. Fertilizer requires energy inputs: oil in Europe, natural gas in the United States. Fertilizer costs have risen dramatically, tripling from 1971 to 1974, in response to high energy costs and the failure of supply to keep up with demand.[13] As a result India's imports and use of fertilizer has been reduced with a probable decline in her yields expected. Less developed countries are faced with difficult choices. They might count on continuing to import fertilizer to achieve the needed growth in agriculture, but this would increase their vulnerability. If, as the U.S.D.A. estimates, plant expansion in Europe, Japan and the U.S. meets world needs by 1985 at much lower prices, it might be safe to count on imports as a safe option. On the other hand, if the gap in supply and demand forecast by the World Bank is correct, funds need to be diverted from other investments into building fertilizer plants in the third world, thereby providing greater security.[14] But previous less-developed countries (LDC) fertilizer plant investments have been wasteful, diverting resources and resulting in partially idle capacity. A third option is to build new fertilizer plants in OPEC countries, a subject now under exploration between Saudia Arabia and the TVA. Whatever the option, any country which depends heavily on energy imports will also have its prospects for increased agricultural produc-

[13]In Europe and Japan, where fertilizer is from nahptha, a petroleum product, the production costs were directly affected. In the U.S., which has been an important supplier to India, natural gas prices have not increased, but supplies are scarce which in turn slowed growth of U.S. fertilizer capacity. Fertilizer is thus in large demand and this has produced price rises of two to three hundred per cent. See Lester R. Brown and Eric P. Eckholm, "Food: Growing Global Insecurity", in *The U.S. and the Developing World*, ed, by James W. Howe (Washington: Overseas Development Council, 1974), p. 69 and *The World Food Situation*, pp. 60–64.

[14]Brown and Eckhom, *op. cit.*

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TABLE 3.—U.S. MARKET SHARE OF WORLD TOTAL AND AGRICULTURAL EXPORTS 1950–74 [15]

	Total Exports			Agricultural Exports[1]			Share Agri. of Total Trade in	
	World	U.S.	U.S. Share	World	U.S.	U.S. Share	World	U.S.
	Bil. U.S. Dollar		Percent	Bil. U.S. Dollar			Percent	
1950	61.20	10.15	16.6	20.60	2.87	13.9	33.7	28.3
1951	82.15	14.89	18.1	21.63	4.04	14.6	33.6	27.1
1952	80.40	15.05	18.7	26.58	3.43	12.9	33.1	22.8
1953	82.30	15.66	19.0	26.67	2.85	10.7	32.4	18.2
1954	85.70	14.99	17.5	27.89	3.05	10.9	32.5	20.3
1955	93.54	15.43	16.5	28.76	3.12	10.8	30.7	20.2
1951-55	84.82	15.20	17.9	27.50	3.30	11.9	32.4	21.7
1956	103.67	18.95	18.3	30.79	4.17	13.5	29.7	22.0
1957	111.83	20.69	18.5	31.74	4.51	14.2	28.4	21.8
1958	107.88	17.76	16.5	29.83	3.85	12.9	27.7	21.7
1959	115.37	17.47	15.1	31.80	3.95	12.4	27.6	22.6
1960	127.87	20.41	16.0	33.95	4.83	14.2	26.5	23.7
1956-60	113.32	19.06	16.8	31.62	4.26	13.4	27.9	22.3
1961	133.79	20.79	15.5	34.61	5.02	14.5	25.9	24.1
1962	141.41	21.45	15.2	35.25	5.03	14.3	24.9	23.4
1963	153.86	23.10	15.0	38.85	5.58	14.4	25.3	24.1
1964	172.16	26.28	15.3	41.58	6.34	15.2	24.1	24.1
1965	186.39	27.19	14.6	42.68	6.23	14.6	22.9	22.9
1961-65	157.52	23.76	15.1	38.59	5.64	14.6	24.6	23.7
1966	203.40	30.00	14.7	45.03	6.88	15.3	22.1	22.9
1967	214.87	31.24	14.5	44.82	6.38	14.2	20.9	20.4
1968	239.07	34.23	14.3	45.59	6.23	13.7	19.1	18.2
1969	272.57	37.46	13.7	49.34	5.94	12.0	18.1	15.9
1970	312.52	42.59	13.6	53.77	7.26	13.5	17.2	17.0
1966-70	248.52	35.10	14.1	47.71	6.54	13.7	19.4	18.9
1971	349.4	43.49	12.4	57.93	7.69	13.3	16.6	17.7
1972	414.7	48.88	11.8	70.79	9.40	13.3	17.1	19.2
Prel.	566.7	69.12	12.2	107.0	17.68	16.5	18.9	25.6
Est.	775.0	95.0	12.2	127.0	21.55	16.9	16.4	22.7
1971-74	526.4	64.12	12.2	90.68	14.08	15.5	17.2	15.5

[15]Supplied by Arthur Mackie, Director, Economic Development and Trade, Foreign Demand and Competition Division, ERS, U.S.D.A.

tivity tied to the world supply and price of oil. And domestic policies, as in India, of subsidizing consumers through paying low prices to farmers will be increasingly untenable if farm technology costs climb. Technological change, therefore, has increased physical interdependence among countries.

Social interdependence has also increased, primarily as a result of the tight supply situation. This increase has been the focus of attention of a series of studies on the world "food security" crisis done by Congress, business groups, and the executive branch.[16] If nothing else, these studies have increased awareness and understanding of issues raised by interdependence. This situation, in which the policies of states are increasingly intertwined—with each sensitive to changes in another—results from several factors. First, there has been a steady rise in world demand fueled by population and income growth. In the last two decades increases in food production in many poor countries has barely kept pace or even fallen behind rapid population growth (see Figure 1). And in more industrialized states affluence has increased demand for meat products, which in turn multiplies demand for grain and fish used to feed cattle, poultry and other livestock. Driven by population growth and affluence the increase in demand has been steady, predictable, and, short of disas-

[16]See, for instance, *U.S. and World Food Security*, Committee on Agriculture and Forestry, United States Senate, March 15, 1974; *The World Food Situation, op. cit; The World Food Problem, Proposals for National and International Action*, U.N. document E/Con F. 65/4 August, 1974; *International Food Reserves* report of the Subcommittee on International Organization and Movements, Committee on Foreign Affairs, U.S. House of Representatives, October, 1974, and *A New U.S. Farm Policy for Changing World Food Needs*, Committee for Economic Development, New York, October, 1974.

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FIGURE 1.—FOOD PRODUCTION PER CAPITA [18]

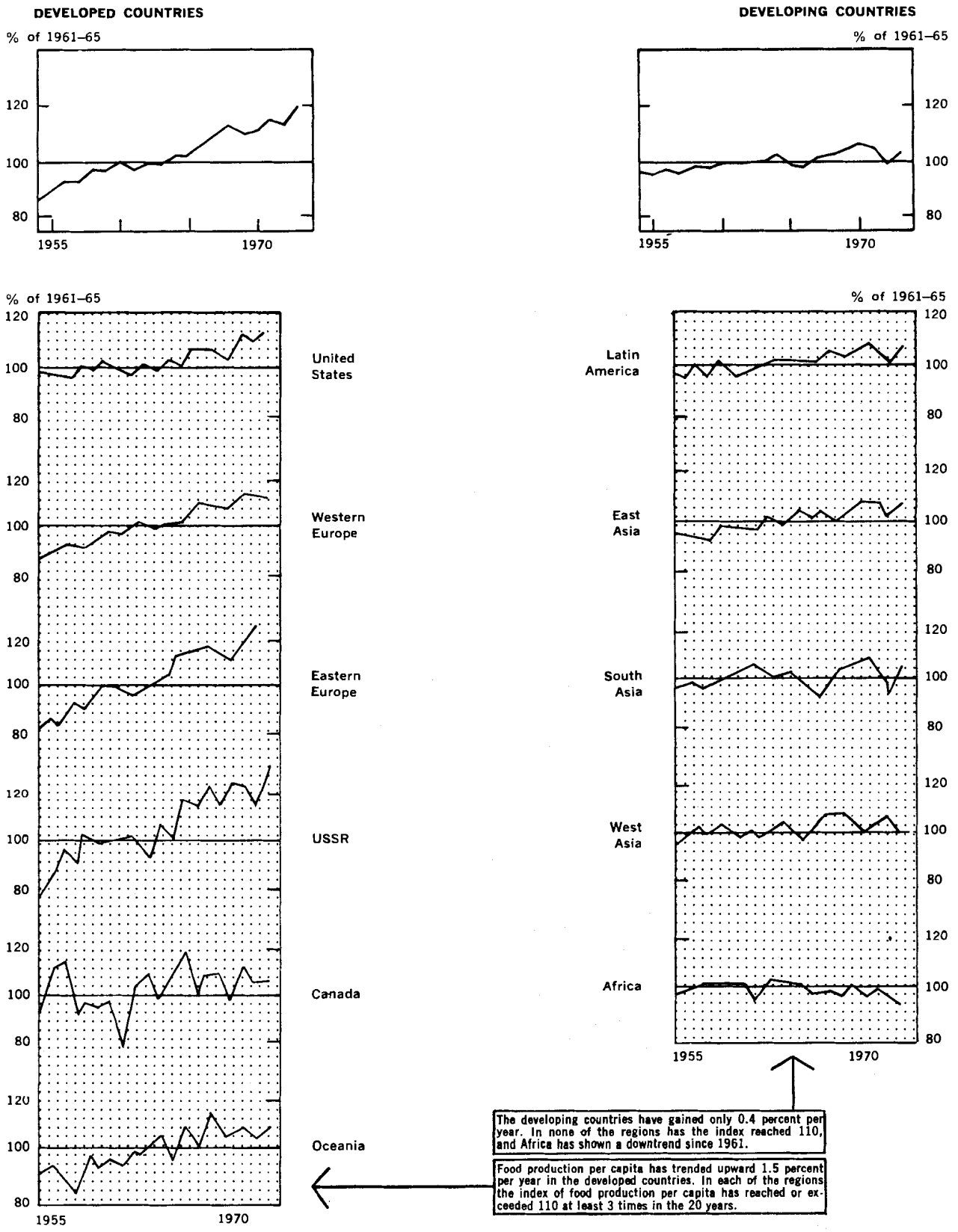

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TABLE 4.—INDICES OF AGRICULTURAL PRODUCTION IN THE WORLD AND MAJOR REGIONS AND COUNTRIES, 1965-74[17]
(1961-65 = 100)

	1965	*1966*	*1967*	*1968*	*1969*	*1970*	*1971*	*1972*	*1973*	*Preliminary 1974*
World agricultural production [1]	104	108	112	116	117	120	125	123	130	130
Developed countries [2]	104	110	113	117	116	118	123	122	129	128
Less developed countries [3]	104	106	110	114	120	124	127	125	131	133
Per capita world agricultural production [1]	100	102	104	106	104	105	107	104	108	106
Developed countries [2]	102	106	108	111	109	110	114	112	117	115
Less developed countries [3]	99	93	100	101	103	104	104	100	102	101

[1]Excludes Communist Asia.
[2]North America, Europe, USSR, Japan, Republic of South Africa, Australia, and New Zealand.
[3]Latin America, Asia (except Japan and Communist Asia), and Africa (except Republic of South Africa).

ter, will continue for at least two decades.[18]

Per capita agricultural productivity has not grown evenly. Since the 1950's growth has been largest in key developed countries where prices have generally been above world market prices and lowest in several LDC's where prices have been below the market (See Table 4). Although use of new seeds and fertilizer has brought dramatic increases in production there is reason to believe these gains are limited.[19] In the United States the growth in production from 1961–1974 was due largely to gains in yield per acre—36 percent—rather than to more land under cultivation which increased only 5 percent.[20] The dramatic yield increases possible with new "miracle" seeds have been realized on only a small portion of the current LDC crop land, but the moist soil that makes gains possible is limited, and fertilizer and pesticides needed for such crops are currently in short supply and raise long run ecological problems. Recent studies suggest the upward curve of productivity gains may have reached an asymptote.[21] Certainly bringing more land under cultivation can not continue indefinitely.

Short run variations are the immediate problem, however. The supply shortages in 1972 were certainly related to the U.S. devaluation and to crop shortfalls due to bad weather conditions in the U.S.S.R., China, and parts of Asia. This was the first time in 20 years that world grain production fell. In 1974 the U.S. crop was well below expectations and this prevented expected restoration of stocks. The decision in 1972 by the U.S.S.R. to import grain rather than tighten its belt domestically and slaughter livestock as it had done when shortfalls occurred in the 1960's was an unexpected policy which directly affected world prices and encouraged speculation.[22] This decision occurred while major world grain suppliers were pursuing policies to hold back production. In this case since the United States had a policy of export promotion, maintaining an open market and even subsidizing exporters, it had inadequate intelligence machinery geared to foresee or regulatory procedures able to respond to the short supply situation which resulted. Since then the implications of overseas production and demand policy have been given much greater attention in shaping domestic agricultural policy.[23] And the inflationary effects of short supply on the domestic economy as well as its positive balance of payments consequences promoted a greater bureaucratic capacity among financial experts to predict the volume and price of international trade. The U.S. Treasury now makes independent estimates

[17]From the *World Agriculture Situation*, p. 5

[18]The population distribution in many countries, where 40–60 percent of the populace is under 18 and has yet to pass through the period of fertility, is such that even if birth rates drop dramatically (an unlikely event), population growth will continue to fuel demand. In addition, as long as economic development continues, the growth of demand for grains will continue as Japanese substitute wheat for rice. In developed states per capita grain consumption is about 1,800 pounds a year compared to about 500 pounds in most less-developed ones. See *Assessment of the World Food Situation*, U.N. World Food Conference, Rome, November 5–16, 1974, Item 8 of the Provisional Agenda, E/CONF. 65/3.

[19]From the *World Food Situation*, p. 17.

[20]Calculated from data in *World Food Situation*, op. cit., p. 22.

[21]A report to the nation by the National Academy of Sciences entitled *Agricultural Production Efficiency* indicated a pessimistic future for production growth, *New York Times*, January 13, 1975, p. 1. Moreover, USDA estimated less than half of the new acres under production in 1974 in the United States have adequate soil erosion control, *New York Times*, January 11, 1975, p.1.

[22]Arthur B. Mackie, "International Dimension of Agricultural Prices," *Southern Journal of Agricultural Economics*, July, 1974, discusses this and other factors forcing prices upward and inviting speculation, see pp. 13–15.

[23]The data needed for an early warning in 1972 were available to the government, but channels between the Moscow embassy to key posts in USDA "blocked" the flow of this information with its full meaning. Richard Bell, Deputy Assistant Secretary, USDA, offered this interpretation and along with David Hume, Director of the U.S. Foreign Agricultural Service, and officials in the Economic Research Service discussed the enhanced role of overseas commercial (and humanitarian) need in shaping current policy (interviews March 14 and January 7, 1974).

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TABLE 5.—INDEX OF WORLD FOOD SECURITY[25]

Year	Reserve Stocks of Grain	Grain Equivalent of Idled U.S. Cropland	Total Reserves	Reserves as Share of Annual Grain Consumption	
		(millions of metric tons)		(per cent)	(no. of days)
1961	154	68	222	26	95
1962	131	81	212	24	88
1963	125	70	195	21	77
1964	128	70	198	21	77
1965	113	71	184	19	69
1966	99	79	178	18	66
1967	100	51	151	15	55
1968	116	61	177	17	62
1969	136	73	209	19	69
1970	146	71	217	19	69
1971	120	41	161	14	51
1972	131	78	209	18	66
1973	105	20	125	10	37
1974	89	0	89	7	27

of foreign demand, not necessarily in agreement with those of Agriculture.[24]

Thus, the volume, physical linkage, and policy sensitivity of global food production and distribution has increased. In the high price/tight supply context this interdependence makes food policy more critical and the world food situation a question of "security" as Table 5 suggests by highlighting the decline in basic reserves.

Two basic responses have been made to this situation. The U.S.D.A., as represented by key spokesmen such as Secretary Earl Butz and Director of Agricultural Economics, Donald Paarlberg, believe current shortages may be a short-term situation with production able to respond to increasing demand for the next several decades. Of course, this assumes only modest needs in poorer countries and weather conditions about the same as in recent years. Indeed, surpluses and low prices remain a great fear for many in Agriculture. Others see growing resource constraints on production coupled with population growth and demand for better nutrition creating increasingly dangerous situations whenever shortfalls occur. Among other problems they cite the "phantom acres" in U.S. agriculture reserves where nearly 30-million of the 60-million acres subsidized in 1972 in order to hold them out of production, apparently proved unsuitable for production when controls were lifted.

Both pessimists and optimists agree that if population growth continues unabated beyond several decades, and new technology does not permit greatly enhanced productivity, shortages will be chronic. And in the more immediate situation both sets of analysts expect interdependence to grow whether shortages continue or not.

The Soviet Sale: A Case of Interdependence

The interplay of bureaucratic concerns aroused by food interdependence is illustrated by the case of the Russian grain purchases from the United States in 1974. Since these came when there was a recognized tight supply, it was treated with much greater attention than earlier sales. In September the Soviet Union decided to buy grain abroad as a result of mediocre domestic harvests and apparent high rates of spoilage on the reserves from the 1973 bumper crop. Their decision and the amount of imports sought were not predicted by U.S.D.A., or other intelligence networks.[26] The Soviets apparently tried to conceal yield information from a team of visiting U.S. Agriculture Department crop ana-

[24]The international section of the U.S. Treasury, for instance, has dramatically increased its expertise in and attention to agricultural economic activity since 1973. Dan Morgan notes that the Treasury had divergent demand estimates from those of Agriculture in his article, "Food Scarcity Dictates Policy," *Washington Post*, January 12, 1975, p. L16. The disagreement in 1974–1975 was over wheat and feedgrains, especially the latter, and Treasury's higher demand estimates have proven more correct.

[25]From Brown and Eckholm, *op. cit.*, p. 74.

[26]The Foreign Agriculture Service (in June) estimated the 1974 Soviet crop would be adequate for their domestic needs. Probably the first network to learn of the impending Soviet purchase were the grain traders who, prior to the September sale, according to one official had been hearing "rumors of Soviet purchases from our Paris office for weeks. We all expected them to be into our market—but we didn't know for how much." Interviews with George Shanklin, FAS (January 9, 1973) and Wes McAden, Vice-President, Food Industries (January 6, 1973).

lysts in August, by prohibiting the team's visit to sensitive crop areas. Their action violated a bilateral agreement on exchange of information, although the United States protest was a "put-up job" since we know the Soviets consider data on reserves and harvests as strategic and release them only long after they are irrelevant for market adjustments.[27]

Continental and Cook, the second and third largest U.S. grain dealers, were approached by Soviet trade negotiators and asked to prepare offers for large sales of corn and wheat. They reported this to the U.S.D.A. which according to the 1973 Agricultural act was to be notified once sales agreements were reached for any large amounts. However, when the firms reported combined sales of 3.2-million-tons of grain on the same day, key officials in the Offices of the Secretary and Assistant Secretary for International Affairs and Commodities were surprised. They had not realized that *both* companies might receive orders. One million tons was to be the total limit. Furthermore, they learned that other firms were also negotiating for possibly more sales with the Soviets. When the White House economic officials were notified, including Treasury Secretary Simon, they felt the sale had to be abrogated. Several factors led to this decision.

Treasury and Council of Economic Advisors (CEA) officials were fearful of domestic price effects. It was now clear there would be a scarcity of grain in the world in 1974 and prices had already reached record heights. Figure 2 shows price trends in key crops in recent years.[28] In addition the estimates of the total U.S. crop had been falling since July, and hard estimates from other key grain producers were not certain. There was a fear, expressed by one OMB official, that the economic effects might be severe, if supplies were shorter than projected. U.S.D.A. estimates were wrong before. In any event some exacerbation of domestic inflation through a rise in food prices seemed likely.

Agricultural officials, generally delighted with high prices, also had reasons to favor cancellation. Foremost was the desire to protect sales to regular trading partners. Japan, for instance, a major customer, provides estimates to U.S.D.A. of her annual purchase intentions and any important changes in these. In turn, if these intentions are accepted, U.S.D.A. provides assurances that the U.S. market will supply these amounts. There was a risk that the Russian sale might deplete stocks to the point where some regular foreign or domestic customer could not be supplied. A second important concern, especially to Treasury officials in addition to U.S.D.A., was the adverse impact of high prices on feed lot operators whose grain costs were already high compared to livestock sale prices.

State and AID officials also had reasons for opposing the sale. First, diplomatic economists wanted to prevent disadvantages to the United States from the Soviet position as a monopoly trader. This required careful monitoring of sales. Second, this unexpected movement of commercial grain might reduce the funds and tonnage available for food aid shipments. The food aid program had become increasingly important as a diplomatic tool for the State Department as Congress cut back the foreign aid program in the wake of Vietnam. In the works, for instance, were concessional food sales to Egypt and Syria, agreements to be signed in November. Such aid was strictly based on political calculations, since requests from more needy recipients were left unresolved. Moreover, a rapid stock depletion would reduce U.S. leverage at the World Food Conference, only a month away; indeed it could be a subject of severe criticism from countries seeking increased food aid. Thus, nearly every bureaucratic actor save the grain trading firms and the Soviets had incentives to hold up the sale. The former of course, with support from whatever friends they could muster, opposed holding up the sale. After all they had already purchased grain futures and leased ships to cover these sales and stood to lose considerable sums. Fortunately, for the firms, Treasury officials, headed by Simon who went to Moscow two weeks later, worked out a limit on sales in this period that allowed the companies to renegotiate the sales at reduced levels (from 3.2 to 2.2 million tons total). This was quickly accomplished through their Paris offices. Although prices fell the maximum allowable on the exchanges for two days after the abrogation was announced, they quickly rebounded.

One result of the experience in this grain sale was for the Agriculture Department to set up more strict reporting methods and to institute voluntary export controls. All large sales since October, 1974, to the present (March, 1975) are reported to the Foreign Agricultural Service.[29] Any daily sale over 50,000 tons or weekly sales over 100,000 tons to one destination is to be reported. Sales which fall outside guidelines of expected sales to regular customers are reviewed by an interagency committee and can be held up. There have been some proposed purchases that appeared to be made for re-

[27]Since the Soviet Union carefully guards its crop data, the U.S. action in withdrawing its visiting agricultural team was largely symbolic, a way to protest the unwillingness of the Soviets to share their crop information. The FAO's statistics suffer from the requirement of relying upon official country reports that may be late and less than accurate. These comments are based on interviews with James Placke, Director of Office of Food Policy, U.S. State Department, and Robert Tetro, Senior Economist at the FAO, North American office.

[28]From 1974 *Handbook of Agricultural Charts*, U.S.D.A., Figure 53, p. 45.

[29]Previously weekly sales were reported to the Statistical Reporting Service which published the compiled results.

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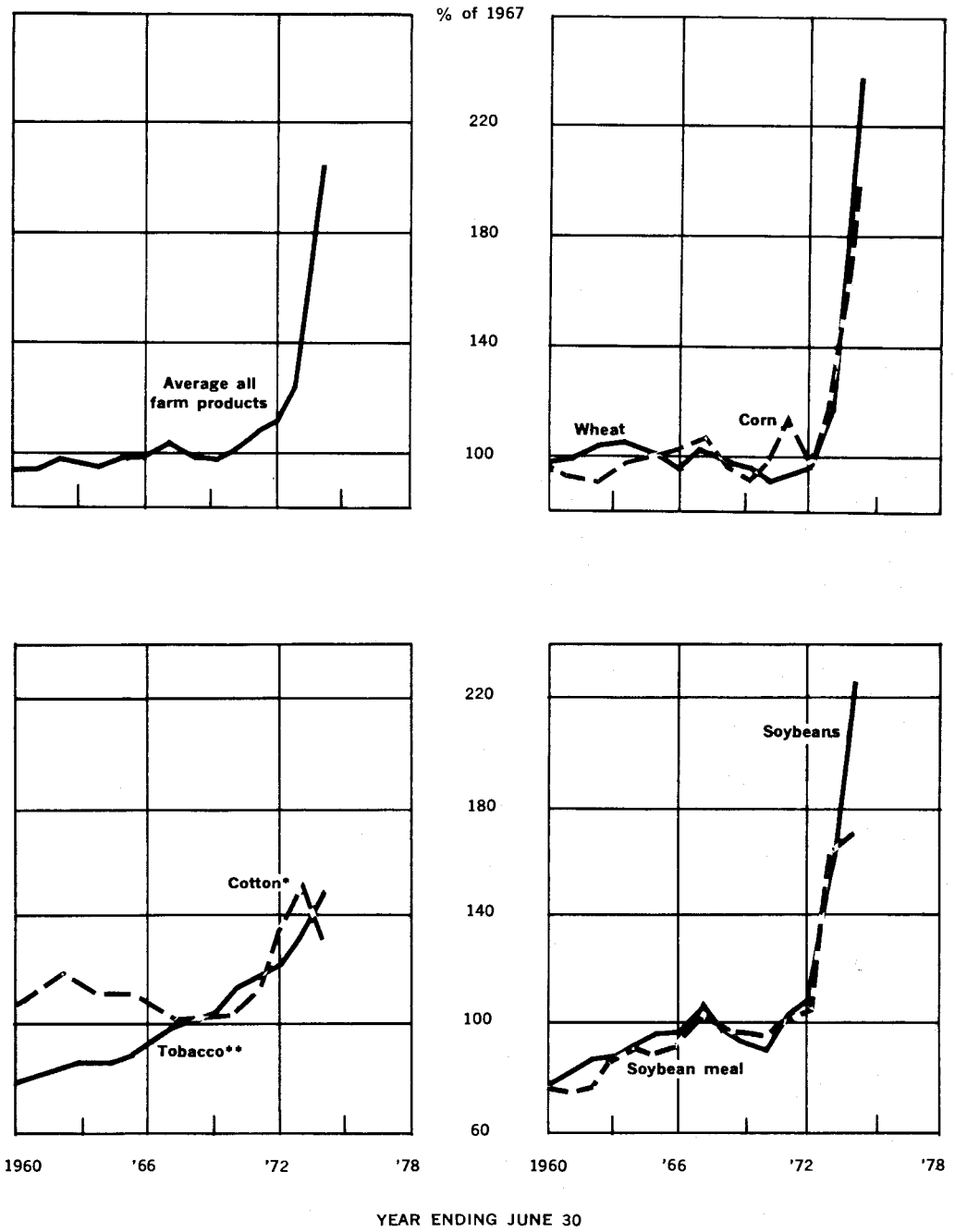
FIGURE 2.[28]—EXPORT PRICE INDEXES FOR FARM PRODUCTS



*Excluding linters.

**Flue-Cured.

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export or stock piling. These have been studied by the Export Monitoring Committee for Agricultural Products and purchasing country's representatives have been consulted. Where the FAS estimates for sales to the importing country were exceeded due to changed or unknown circumstances, sales were allowed to go through. In a "few" cases, buyers have been asked to postpone their purchases.[30] Such postponements generally meant diverting sales to Southern hemisphere exporters such as Argentina and Australia or postponing them for later delivery.[31]

The Soviet grain sale highlights several points about food interdependence. First, international agreements and organization play little role in short-term distribution decisions. The Food and Agriculture Organization (FAO) was not consulted; nor is it in a position to bring much pressure, though its call for intergovernment consultation to guarantee enough grain for basic food aid needs was followed. Other agencies or agreements e.g., the World Food Program, GATT, or the International Wheat Council were also not involved. Second, as food becomes more fungible economic considerations increase. Treasury, OMB and the CEA have increased their involvement in food exports, whether commercial sales or not. Third, information is inadequate—on overseas crops and policies, on domestic production and supplies, and on market behavior, i.e., elasticities. And fourth, when for different reasons various interests in the Government agree, the Government can act quickly, as it did in forcing cancellation of the sales to the Soviets within 24 hours. Conversely, as we shall see later, disagreement, when coupled with supply-demand uncertainty, can foster interminable vascillation.

American Interests

American interests in food issues have rested on an historical interest-based consensus. This consensus dissolved under conditions of tight supplies and global interdependence. Increased dissension is best illustrated by the current conflicts encountered in the P.L. 480 Food for Peace program.

In the 1950s and 1960s the multiple goals of this program satisfied a wide variety of domestic and international interests. Foremostly, it was a surplus disposal program, reducing government supplies that overhung the market and ran up large storage costs. During its heyday in the 1960's when India faced famine conditions wheat exports alone under the program reached a two-year high of 26.1 million tons (in 1965 and 1966). By 1973 and 1974 government financed wheat exports were down to 5.8-million tons.[32] The program also was designed to develop markets abroad, which worked in several cases, notably Japan, Turkey, South Korea, Taiwan, and Israel. By reducing surpluses and developing overseas markets P.L. 480 served well the interests of U.S. producers. And through international agreements with other producers under the International Wheat Convention and the Food Aid Convention and through consultation under the Commodity Surplus Disposal Committee (CSD) of the FAO, friendly competitors were reassured. The expected consequences of greater import demand and higher prices would benefit all producers, as indeed they have. For producers, events in 1973 and 1974 indicate the program has worked, prices are up, surpluses are down and P.L. 480 can be phased out. As one Agricultural official suggested the program has run its course and could now be transferred out of Agriculture or simply abandoned.[33]

Public Law 480 has satisfied other U.S. interests as well, namely, diplomatic and humanitarian. It has been used to establish stronger ties with other countries and to promote economic development. Yugoslavia and Poland, for instance, not the poorest of countries have received considerable assistance. The United States developed large local currency accounts in payment for food aid in dozens of countries that have been used by U.S. government agencies to support programs of research and inter governmental collaboration. Foreign currency repayments under agreements from 1954 till 1971 amount to $13-billion. These have been used to make further loans (43 percent) or grants (14 percent) for economic development to support common defense (13 percent) and to pay U.S. expenses, such as embassy costs, Fulbright Hays exchanges and collaborative research (25 percent).[34] In India enormous counterpart funds piled up; these were used in development projects and eventually just

[30]Two officials who review these cases declined to give details of any particular cases. Mexico and Portugal are countries where sales have been held up.

[31]These sales still lowered the world supply and affected American and world prices, though probably not as much, according to Lyle Schertz, agricultural economist at ERS.

[32]Figures are from *U.S. Agricultural Exports Under Public Law 480*, Economic Research Service Foreign 395, U.S.D.A., Washington, D. C., October, 1974, p. 161 and *World Agricultural Situation, op. cit.* p. 23. See also "Food Aid Dilemma", *National Journal Reports*, vol. 6, November 23, 1974, p. 1761.

[33]Interview with Arthur Mead, Deputy Sales Manager for P.L. 480, Foreign Agriculture Service. Mead heads the Interagency Staff Committee that regulates the program. A Treasury official was quoted as saying "I think there would be support for killing the entire program if you could shift the money from P.L. 480 to AID", "Food Aid Dilemma", *op. cit.* p. 1,766.

[34]See *1973 Annual Report—Public Law 480*, 93rd Congress, 2nd Session, House documents No. 93–362, September 1973, p. 83.

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given back to the Indian government. Since 1971 all exports under Title 1 (concessionary sales of up to 40 years at low interest) have been for convertible currency.

The funds immediately generated through sales of Title 1 P.L. 480 food to citizens of the recipient country accrue to the foreign government. These are put into development projects previously approved as self-help. AID has often tied agricultural development assistance to projects also assisted by P.L. 480. But development is not always the key component of AID food policy; AID even pushed sales programs on one occasion by loaning foreign assistance funds to Korea to buy U.S. rice commercially.[35] The State Department has used food aid to give potentially hostile countries a stake in good relations with the U.S. and to support client states in Southeast Asia. Commitments to Egypt and Syria were certainly politically motivated, for as Earl Butz views it, "Food is a weapon. It is now one of the principal tools in our negotiating kit."[36] And continuing food aid to Cambodia and Vietnam was deemed vital for the continuing survival of the regimes we backed there.

Solely humanitarian assistance has been given under Title II by outright donations to needy people through the World Food Program and UNICEF under the U.N., through voluntary agencies, and directly through governments. Two-thirds of the $6.3 billion Title II funds given from 1954 to 1973 has been through Church World Service, Care, Catholic Relief Services, and various other nonprofit voluntary agencies. The Food for Peace program has been an important resource for humanitarian impulses of American organizations, augmenting overseas health and educational programs, and justifying careers for a large food aid bureaucracy that manned distribution centers, clinics, and schools around the globe. As one cynic in the Agriculture Department noted, these voluntary agencies have a big bureaucratic stake in a sizeable Title II program.

Tight supplies have led to a crunch of interests. After 1972, the food aid program began to have an effect on domestic prices because the exported food came directly from market purchases either financed by U.S. credits or paid for and shipped abroad by the government itself.[37] While all the interests mentioned above continued, new domestic ones became involved, old interests came into conflict and the budget decision for P.L. 480, largely a matter of executive discretion not requiring Congressional action, became a major point of bureaucratic politics. Paradoxically as the tonnage of food aid declined the attention it received and the level of officials involved in it went up.[38]

In the spring of 1973, rising prices threw the P.L. 480 budget out of whack. Until then P.L. 480 programs, export policies, and domestic agricultural policies had "run along different channels."[39] As a result of the conflicting interests, OMB organized a deputies level P.L. 480 interagency committee which it chaired and which contained representatives one or two echelons above those in the regular ISC (the interagency staff committee that began under Eisenhower, it is chaired by the Agriculture Department and handles specific allocations).[40] This OMB committee froze P.L. 480 commitments for three months in mid-1973 until harvest yields were known. It dropped back fiscal year 1974 tonnage commitments to magnitudes equivalent to the retrenched dollars budgeted. As a result, the tonnage of P.L. 480 exports fell sharply. The importance of the program in U.S. export trade fell from a high of 41 percent of the value of all agricultural exports in 1957 and an average of 32 percent in the 1960s to less than 5 percent in fiscal year 1974.[41] But the attention paid to the program both in the press and in government meetings increased dramatically as an interest-based consensus turned into a moral and interest-based dissention.

In the spring of 1974 when Agriculture forecasted large crops, it was proposed by State and some Congressmen that the budget be increased from nine-tenths-billion dollars or 4.5-million tons of food, but OMB demurred. Wait till the crops are in, they proposed. In September with bad crop news and rising prices, speeches scheduled for President Ford and Secretary Kissinger required some statement on food aid. It was decided to pledge an increased dollar commitment, but not necessarily an increase in tonnage. Despite pressure at the November World Food Conference this position was maintained. Although the Cost-of-Living Council had gone out of existence, CEA and

[35]The rice loans were for 30 years at three percent interest and totaled $73 million in 1971–73. See Dan Morgan, "Rep. Passman Linked to Rice Sales Abroad", *Washington Post*, January 26, 1975, p. 22.

[36]*Time Magazine*, November 11, 1974, p. 80.

[37]*1973 Annual Report—Public Law 480, op. cit.*, p. 104.

[38]For a detailed discussion of the bureaucratic politics see Leslie Gelb and Anthony Lake, "Less Food—More Politics," *Foreign Policy*, No. 17, Winter 1974–75, pp. 176–189.

[39]Interview with Phil DuSault, Office of Management and Budget and in charge of OMB's PL 480 review, January 14, 1975.

[40]The OMB group had representatives from NSC, CIEP, CEA, State, AID, Treasury, Commerce, and Agriculture. The regular ISC includes representatives from the last five agencies, plus Defense.

[41]Figures from *U.S. Agricultural Exports under P.L. 480; op. cit.*, p. 1., and *1974 Handbook of Agricultural Charts*, Agricultural Handbook No. 477, U.S.D.A., October, 1974, p. 46.

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Treasury continued to put pressure on the OMB inter-agency groups to postpone any final commitments. The delay in decision-making brought pressure from Congress, from overseas recipients, and from the World Hunger Action Coalition led by the voluntary agencies who administered part of the Title 2 grant programs. Senators made personal appeals, stories were leaked as to the options on food aid, and leading churchmen wrote letters. But the critical period of December-January for getting shipments under way to India and Bangladesh passed without a public announcement.[42]

There are several explanations for the postponement of fixed public decisions on P.L. 480 for 1975. First, the program is very flexible and can be fine tuned. Although the decision to raise the budget was generally made in September after pressure from State with the backing of Agriculture, the new level to be reached was left open. After all, the President and Secretary of Agriculture could have spent 15-billion, rather than the 1.5-billion finally agreed upon by using CCC (Commodity Credit Corporation) borrowing authority.[43]

They could also, as was done, slow down commitments to increase later options. Since there was so much disagreement in the OMB's Deputy Assistant Secretaries group, decisions were made quarter by quarter and three options discussed. Although there was agreement that the pro-cyclical behavior by P.L. 480 of dumping abroad in surplus years and holding up aid in lean ones was immoral, domestic pressures pushed in this direction. By vacillating on a decision, two hoped for actions were encouraged. First, speculators, including farmers, who had been holding back grain in anticipation of higher prices might begin to sell. If prices fell, more grain would be available for export regardless of the budget figures finally decided. Second, overseas aid recipients might put increased pressure on other potential food donors. In December, for example, Iran bought U.S. grain commercially to be sent to Bangladesh. Finally, if grain was as tight as some feared, the low-key strategy might reduce the prospect of using formal export controls on grain in which case P.L. 480 shipments would be prohibited by law. Each week a Food Deputies Group, chaired by CEA member Gary Seevers met to review price developments and identify linkages in domestic and international policy.

In this case the bureaucratic politics of food aid shifted from a low-level division of labor between Agriculture and AID, supported by interest consensus, to interagency ad hoc bargaining and the necessity of Presidential resolution. Unlike 1973 when domestic inflationary pressures led to a bureaucratic consensus at the OMB level to freeze P.L. 480, the pressure of international interests in 1974 pushed the decision upward and increased initial commitments.

A second conflict over food aid involves who receives the aid. Senator Humphrey and others in Congress, along with some AID officials and private groups, became disturbed at the large proportion of food aid going for political rather than humanitarian purposes. "Food for war" was the label applied to the large shipments to Vietnam and Cambodia. In December the Congress passed an amendment that said Title I concessionary sales "should" go at least 70 percent to states most severely affected by the price rises in oil and food. In order to get Title I funds for "diplomatic" aid for countries such as South Korea, Indonesia, Chile, Egypt, and Israel, the State Department proposed that Cambodia (on the U.N.'s "most severely affected" (MSA) list) and Vietnam be considered "needy" along with India, Bangladesh, Sri Lanka, the Sahel, and others.[44] This conflict over foreign objectives parallels a number of "idealist" vs "realist" disputes between Congress and the State Department over policy in 1974, such as the cut off of military assistance to Turkey.

Interest Representation and Rationality

The ad hoc interagency collaboration begun on food policy in 1973 strikes a happy ground between usually meaningless organizational solutions to food issues, such as a "food czar", and allowing Agriculture to continue its dominant role. Clearly no one agency is prepared to represent all U.S. interests in the domestic conflict of producers versus consumers, the foreign-domestic conflict over grain reserve, trade and aid policy, and the foreign conflict over the priority given different foreign interests accommodated by U.S. policy. Some spokesmen for each agency, however, hold rather agency-centric views; as one official suggested, Treasury's role was vital because Treasury supported the "national interest" in food policy, compromising between State with its excessive interest in foreign outcomes and Agriculture with its domestic bias. And one Agriculture official exclaimed, "Tell OMB

[42]March-April, 1975, before the winter wheat crop came in was considered the critical period. This required a commitment in December and January as to tonnage and ships.

[43]DuSault, *op. cit.* pointed out this flexible spending prospect. Anthony Lewis writing in the *New York Times*, January 23, 1975, p. 33 discusses the $1.5 billion commitment, which was according to Henry Kissinger, "the highest proposal."

[44]This discussion is based on figures from Anthony Lewis, "Press and Politicians", *op. cit.* They are somewhat at variance from those reported in the *National Journal, op. cit.*, p. 1764.

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to get the hell out of food policy, and you can quote me."[45]

Decision-making on global food issues has clearly had a domestic producer bias, best exhibited by the reluctance of Agriculture to commit the United States to holding reserves again. Intelligence and economic analysis play a critical role in policy-making; Agriculture has had until recently a virtual monopoly on this resource. While special interests, such as those of agribusiness, are not given undue weight on key questions where high-level interagency bargaining occurs, domestic commercial interests are paramount in Agriculture's approach to routine international questions. For example, Agriculture's overseas attaché service gives top priority to maintaining and building export markets rather than to lowering costs of food to overseas consumers. Expanding grain-fed chicken exports to Japan takes precedence over efforts to "rationalize" U.S.-Japanese agriculture. There is also a bias against long-term interests in Agriculture analyses, as policy review is focused heavily on current crop years and market activity. This seems true in other agencies too. In general, on individual issues U.S. policy for global cooperation is not related to coherently planned or long-term objectives. Thus AID increases its agricultural assistance budget, the State Department supports establishment of new international organizations, such as the World Food Council, CIEP (the Council on International Economic Policy) studies trade adjustment prospects and Congress places constraints on P.L. 480 uses and legislates domestic farm programs, all without planned relation to each other or to the interdependence of effects. This is due partly to a lack of concerted vision and partly to the feudal character of the U.S. governmental organization in areas where Presidential leadership is weak. The result is that even on components of food policy where a consensus exists, such as the commitment to assisting agricultural production in poor countries, a global strategy and organizational leverage to effect change are lacking. America's global effort to stimulate Third World production resembles more the WPA than the Manhattan Project. AID channels funds through the Consultative Group on International Agricultural Research to international institutes to improve yields of wheat, maize, rice, and tropical products in cooperation with the Ford, Rockefeller, and Kellogg foundations, the World Bank, and a handful of foreign governments. The Department of Agriculture eliminates its International Agricultural Development Service division, reduces the overseas activity it sponsors with P.L. 480 funds or foreign assistance funds from AID and continues its own research programs principally along domestic lines.[46] The Ford foundation provides more leadership than either AID or Agriculture in developing research and assistance. In general, on the list of 13 criteria for a "rational" foreign policy process compiled by Peter Szanton, food policy is satisfactory with regard to four, uncertain in three respects and inadequate in six cases.[47] Table 6 below summarizes these judgments.[48]

In spite of its enormous impact on global agriculture, U.S. foreign policies after 1972 have been formulated largely in response to problems, such as world hunger or high prices, rather than on the basis of maximizing its domestic food resources as a lever to shape the global food system. The State Department is reluctant to tie food issues to other problems; even the "self-help" requirements in the P.L. 480 program that mandate recipients to pursue agricultural and development projects are considered and treated as "boiler-plate".[49] Although pressure for reform was exerted in the 1960's by carefully controlling aid, no agreement has ever been cancelled because a recipient used funds unwisely. Conversely the Agriculture Department fears international commitments which might give foreigners control over aspects of U.S. farm policy, the vulnerability of our domestic market notwithstanding. Treasury and other active participants in interagency bargaining, including the key agriculture committees of Congress, have a strong domestic orientation that makes it unlikely they would take major initiatives on international food policy. A possible exception to this is Senator Humphrey's promotion of a food reserve system and the limitation he and Senator Hatfield worked to have Congress place on PL 480 "political" aid.[50] Increasing the international contacts of Congressmen or the international professional associations of bureaucrats, could improve understanding of inter-

[45]Interviews with Murry Ryss, Treasury, and David Hume, Agriculture, January 7, 1975.

[46]AID signs Participating Agency Service Agreement (PASA) agreements with a number of "domestic" agencies, e.g., Labor, HEW, Interior, and Agriculture, to finance technical assistance programs directed by that department in foreign countries.

[47]Szanton developed these as part of his study of U.S. Foreign Policy as Research Director, Commission on the Organization of the Government for the Conduct of Foreign Policy.

[48]Lack of "good" analysis was stressed especially by White House participants, i.e., OMB and CEA.

[49]Boiler-plate is bureaucratic jargon for the verbiage attached to agreements primarily for external show and which is not considered serious by the parties to the agreement.

[50]Humphrey's bill would create a domestic reserve and is not designed as an international policy. Occasionally Congress explores bold ideas, but these often turn out to be dead end as in the House Foreign Affairs study on "Data and Analysis Concerning the Possibility of a U.S. Food Embargo as a Response to the Present Arab Oil Boycott," Report No. 93–674, November 29, 1973.

TABLE 6.—EVALUATION OF FOOD POLICY RATIONALITY

Satisfactory

1. *reasoned conception of objectives* (as illustrated by Kissinger's speech at the World Food Conference)
2. *appropriate participants consulted*—compared to defense matters there is general knowledge among most of what is at stake.
3. *decisions at the lowest level capable*—e.g. Food for Peace, 1961–72.
4. *decision as open and public as consistent*—true for most policies, e.g. full production.

Unclear

1. *relevant considerations applied*—generally true when interagency organization is involved.
2. *resources commensurate with task*—U.S. farm potential is great, but government discretionary authority rather limited in regulating markets, providing "security" or funding food aid, and the officials at NSF, CIEP, and State who are knowledgeable and full-time on food issues are very few.
3. *actions consistent with public sense of U.S. interests*—true *except* for food aid and soybean controls.

Unsatisfactory

1. *implications fully canvassed*—this requires "good" analysis which seldom comes out of Agriculture or State except for Agriculture's Economic Research Service on economic issues.
2. *full range of alternatives presented*—incrementalist bureaucratic adjustment procedures seldom consider the "full range" e.g. consumer subsidies, an international grain reserve linked to the IMF.
3. *decision communicated in a clear, timely fashion*—both industry and foreign governments have received misleading signals on occasion (e.g., Continental Grain in 1974) and department positions have been "fudged" in interagency bargaining.
4. *actions monitored to assure compliance*—"voluntary" is a key word in enforcement, and oversight (in the pejorative sense) is the procedure to avoid confronting disagreeable information; this is less true for domestic programs than the P.L. 480 program.
5. *results of decision assessed*—neither State, Agriculture nor other agencies have institutionalized or informal procedures for determining what was "right" or "wrong" about a decision, except in the grossest sense.
6. *best obtainable information*—U.S. data and analysis is the best in the world, but it is still not adequate for confident policy decisions.

dependence, but it would not necessarily broaden perspectives. When Representative Passman, who wields powerful influence over foreign assistance legislation, promotes purchases of high price rice while traveling abroad to improve his understanding of foreign affairs, it seems likely that international experiences will be of limited effect on objectives of officials.[51] International elite networks that break down narrow professional or business interests would be most helpful. Circulation of talented officials among organizations, important in creating elite networks already occurs; it could be expanded. For instance, former U.S.D.A. officials serve in the Treasury Department, public interest lobbies, and the FAO. Such career patterns should be encouraged, and circulation of personnel from the State Department into the ERS or FAS in Agriculture and vice-versa could be encouraged. This would promote a corps of experts on international food issues available for service across government departments and White House councils.

The major organizational response to the moral and economic conflicts of short supply is the creation of inter-agency groups under Agriculture, State, CEA, OMB, and the increased staff attention given by the NSC and CIEP to food issues. To insure continuing representation of international interests these responses would need to be maintained. The Deputies group chaired by Gary Seevers, in particular, has been cited as valuable.[52] In addition, Agriculture's budget with its implications for research, intelligence, and CCC authority, might be reviewed at an early stage by State or an inter-agency group, before the final review by OMB and the Economic Policy Board. When budget cutting is proposed, Agriculture tends to fear cuts in domestic programs more than international ones.[53]

Congressional participation would be improved best by expanding the staff of relevant committees, Agriculture, Foreign-International Relations, and Finance. The Senate Agriculture Committee for instance has only one of eight professional staff members specialized to foreign activity. Congressmen might also be brought into policy formation earlier, in part through staff liaison. Little was done to prepare the 20-member Congressional delegation to the World Food Conference except to "brief" them. They have not been involved in the key interagency committee to follow-up on the Conference, which is especially concerned with planning the U.S. position on world food reserves. And even on food aid Congressmen generally have to lobby rather than participate, unless they initiate legislation thought to be damaging.[54]

[51]See Morgan, "Rep. Passman", *op. cit.*

[52]Several officials interviewed, who attended sessions (from State and elsewhere) offered this judgement.

[53]This step was suggested to me by Harry Blaney, a member of the Policy Planning Staff of the Secretary of State. The increased P.L. 480 funds for 1975 were acceptable to Agriculture only when officials were assured this would not reduce any other parts of the budget.

[54]Senator Hatfield found his opportunity to lobby for more humanitarian aid was dependent on an invitation to come to the White House for ceremonial purposes on another matter according to aide Wes Michaelson. The December 1974 legislation to reserve 70 percent of Title 1 sales for the most needy states was discussed extensively between AID administrator Parker and Senate staff member Tom Saylor. These discussions and resulting wording changes occurred in the face of Congressional action; they were not designed or initiated by the desire to increase Congressional consultation.

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One major problem of Congressional-Executive relations is that access and policy influence by Congressmen seem to occur most fully when some limiting legislation is proposed. Such legislation, however, reduces flexibility and can exhaust the time of policy-makers in non-productive skirmishes.

Intelligence and Analysis Capabilities

The capacity of foreign policy-makers to anticipate the possible dangers and probable outcomes on food issues, from the U.S. point of view, is weak. Projections in 1971 from USDA on grain supplies through 1980 did not anticipate shortfalls and the tight supply situation of 1973–75. Agriculture analysts have been accused of having "straight-edge mentalities," i.e., of making projections by straight extrapolation. In fact, more complicated models are used but the relevancy of parameters derived from past data is questionable. Gary Seevers argues convincingly that much greater intelligence gathering, complete statistical accounts, and more sophisticated analyses are needed.[55] When we had large stocks, the United States was insulated against shocks from abroad. Now uncertainties prevail and dictate cautious policies disappointing our own humanitarian instincts as well as overseas needy. The United States bears a disproportionate share of shifts in world productivity and "for the first time in recent history the U.S. consumer may have a vested interest in foreign aid." Domestic food prices are directly tied to world price and these depend, given rising demand, on improved overseas productivity. Consumers have "a vested interest in foreign assistance programs designed to increase world production."[56]

Both short-term and long-term uncertainties about the probability of key events inhibit satisfactory policy-making. For instance, in the long-run we do not know how urgent are the requirements or how satisfactory the means to reduce population growth. This is the overwhelming problem, but tends not to be critical in attention to daily food issues nor solvable by food policies in the long-run. We focus, therefore on improved information for the short- and middle-range uncertainties, largely questions of supplies available and demand elasticities.

There are two global food intelligence systems, one run by FAO and the other by U.S.D.A. The U.S. system is clearly superior. The FAO system is largely permissive, both depending upon and forced to use official government reports. It tends neither to be as timely nor as accurate as U.S.D.A. intelligence, although its retrospective data collection is quite good. We need better intelligence, especially on crops in the U.S.S.R. and China. Only the U.S. and Canadian systems are continuous in their adjustments of estimates and forecasts, and Canada is very dependent on the United States except for her domestic intelligence.[57] And the U.S. system has a large world-wide and competent network. It has outperformed parallel operations, even in their own countries. At one time the Argentine government used the U.S. agricultural attache's Argentine production figures, combined with estimates from the English, French, and Dutch, finding them more timely and reliable than those from its own reporting operation.

Although the World Food Conference adopted a resolution to improve the FAO global information and Early Warning System, the United States cannot rely alone on such improvements. As long as the U.S.S.R. refuses to divulge information on her reserves, storage losses, and current crops, and other countries have secretive and/or primitive information systems, as do China and India, the FAO system will be limited.[58]

Three organizational changes have occurred to bolster U.S. sensitivity and responsiveness in light of the loss of insurance provided by land and crop reserves. First, the reporting systems have been tuned. The field staff in the U.S.S.R. and Peoples Republic of China (PRC) work to get early estimates—agricultural experts have moved from Hong Kong to Peking. The CIA agricultural information, obtained heavily through private reports on market activity, is widely circulated. And experiments under project Long Area Crop Inventory Experiment (LACIE) have begun to use satellites for crop forecasting, a joint operation of Agriculture with NOAA (the National Oceanic and Atmospheric Administration) and NASA (National Aeronautics and Space Administration).[59] Second, the operation to monitor and review sales has been set up in FAS. This is particularly important in allowing quick responses to actions which individually or cumulatively could have a dramatic

[55]Interview, January 7, 1975.

[56]Gary L. Seevers, "The New Economics of Agriculture" speech at Texas A&M University, October 25, 1974.

[57]The 1974 Canadian Outlook reports, for instance, used USDA figures for all but Canadian production. For the various domestic reporting systems in use around the world see, Wells, *op. cit.*, Annex I.

[58]India and China may not know their situation in timely fashion. And by relying on country estimates the FAO can be embarrassed. For instance, Bangladesh estimates of food deficits pushed by the FAO were undercut by independent smaller assessments later acknowledged as correct.

[59]The CEA and Agriculture conducted a study in 1973–1974 of the adequacy of its reporting and analytical methods. Some of the changes result from its recommendations.

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effect on prices or other commitments. Finally, the Seevers group has been important in bringing people together from different agencies to trade perspectives, review problems, and sensitize each other to varying concerns. Moreover, this operation is strategically located to link operations-level deputies to the President. What is still lacking is an increase in analytical capacity, especially outside of Agriculture, to interpret data and make projections. An important organizational change would be to expand the analytical capacity of State, either by adding professional personnel or by providing funds to buy outside analysis.[60]

Analytical capacity is particularly important for predicting the price of food in the mid-term, that is the next decade. The price of food will be key to achieving emerging domestic and international objectives. Estimating elasticities and locating constraints on vital inputs is important and requires additional organizational resources. If agriculture production is to expand to meet growing demand,[61] additional land, water, fertilizer, and energy is needed. However, the availability of these inputs in an efficient mix may already be in short supply. The marginal productivity of additional land and fertilizer may, therefore, decline at a rate sufficient to further drive up prices. Moreover, various studies of technology cast doubt that new techniques or seeds will yield the gains in efficient production realized in the last two decades.[62] Since demand seems relatively inelastic (as prices go up) future production costs and future shortages are likely to keep food prices high. The proportion of income societies spend on their food, therefore, is unlikely to decline and perhaps may begin to climb. Unless key countries, particularly the United States, adjust the global system to minimize such effects, poor countries not self-sufficient in food or subject to periodic calamitous harvests will suffer disasters.

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[60]Information used by grain traders and consultants is also tapped by the government through the CIA and through exchanges among informal networks linking USDA officials and private traders. This information is of prime short-term value. As one market consultant suggested, no major firm would be "willing to trade their intelligence operations for those of any government", although the USDA, FAO and other sources supplied 90 percent of their information. The critical information was based on contacts in main markets centers globally and the "feel" of the market they derived. See Wells, *op. cit.* pp. 22–23.

[61]Every projection by the U.S.D.A. for 1975–1985 has growth in demand exceeding growth in supply, although world per capita production does go up. See *The World Food Situation, op. cit.*, pp. 35–39.

[62]See footnote 21.

U.S. Policy Instruments

Food issues arise in three domains: production, distribution and consumption. A variety of policies are pursued by the United States and other countries to resolve problems perceived to arise in one of these domains.[63] Often the effects of action in one domain are desired to resolve a problem in another area. For instance, USDA argues that full production policies are aimed at improved nutrition, food safety, and the elimination of waste.

The goals of U.S. policy include rational world agriculture production (in which the United States has a comparative advantage), increased trade, adequate supplies for domestic and foreign consumers, American balance of payments earnings, and food aid and technical assistance to needy countries.[64] Policies tools are applied at all five points of intervention suggested by Robert Keohane and Joseph Nye.[65] The chart below (Figure 3) outlines the range of policy tools used at these points by the U.S. in the three issue domains. As can be seen, though of unequal importance, policies are in existence at every point. Policies to shape the actions of international bodies will be discussed in the next section. Most actions by international organizations, however, are ultimately directed at changing recipient societies and parallel bilateral aid activities and private investment.

In using the range of policy instruments available, three kinds of problems arise: (1) intra-government coordination and goal priority, (2) intergovernment coalition building and (3) linkage of policies. Once decisions for policy points one and two are made outside of Agriculture, say in an interagency forum, important disagreements arise over priorities. Where discretion over different policies affecting the same issue is distributed among several agencies, the prospects that inconsistent policies will be pursued increases.

Getting international agreement becomes increasingly difficult the more actors are involved: that is a prime reason why the United States wanted to limit membership on the new World Food Council to 25. Finally, if grand policy designs are to be achieved it may be necessary to link policies across points of intervention and domains, and even to

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[63]Redistribution proposals, such as having Americans eat less meat in order to increase the grain available for those overseas, are rejected.

[64]See, for instance, Secretary Kissinger, "The Global Community and the Struggle Against Famine", World Food Conference, Rome, November 5, 1975 and the introduction to the Agricultural Trade Development and Assistance Act of 1954 (PL 480–83), Section Two.

[65]See their essay, "Transgovernmental Relations and International Organizations", *World Politics*, Vol. 27, No. 1, October 1974, pp. 55–60.

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FIGURE 3.—U.S. POLICY INSTRUMENTS AFFECTING THE GLOBAL FOOD SYSTEM

	Policy Points				
	Internal Measures	*Border Controls*	*International Organization Measures*	*Border Agreements*	*Penetration of other societies*
Policy Domains					
Production:	Production controls i.e. subsidies, average limitations, price supports, agricultural research	Protection by quotas, tariffs	FAO research/ projects Consultative Group World Bank	Negotiations on foreign ag. support systems	Technical assistance, fertilizer, important subsidies, mainly AID
Distribution:	Consumer subsidies (food stamps)	Export controls subsidies, PL 480 credits Sales review	World Food Council Int. Wheat Council Agribusiness Multinationals GATT IMF UNCTAD OECD	Bilateral trade negotiations Market consultations, Informal guarantees[1] of supplies	PL 480 Title II OPIC
Consumption:	Nutrition research, Inspection and grading	Quarantines	WHO and UNESCO research assistance programs	Inspection prior to export[3]	Famine relief operations PL480 self help requirements Agribusiness promotion[2] World Food Program

[1]Private investment guarantees and encouragement of agribusiness technology transfer, e.g. institutional feeding programs that reduce waste, lower costs to poor.
[2]Kentucky Fried Chicken in Japan, i.e. affecting consumer tastes
[3]EEC informal visits to China to meet requirements US FDA inspectors in Japanese canneries

policies in other issue areas, such as the recycling of petrodollars. The United States could make its willingness to tie the price of oil to inflation in other selected commodities as proposed by OPEC, dependent upon the agreement of oil states with excess reserves to finance food imports to the most needy countries. Coordination, coalition-building, and linkage all tax the barriers separating the U.S. foreign policy bureaucracies as they require cutting across a raft of interests and establishing interagency coordination.

The difficulties faced by the inter-agency committee to follow up the World Food Conference (chaired by Tom Enders, Assistant Secretary of State for Economic Affairs) illustrate all three types of problems. The primary issue facing this International Food Review Group was the question of reserves. The Agriculture Department opposed a reserve system in early 1974. The interagency task force headed by Edward Martin prior to the Conference managed to get Agriculture to accept a pledge of U.S. cooperation in setting up an international reserve, aimed at 60 million tons of grains, enough to cover world shortfalls historically 19 out of 20 times.[66] By retaining chairmanship of the working groups on this issue State was able to provide an initiative which Agriculture or other agencies would not have. Original impetus for a reserve had come from a proposal by the Secretary-General of the FAO, A. H. Boerma, in 1973 along with collateral support from a number of independent studies by both business and academic organizations.[67] The U.S. position regarding hard decisions about the size of each country's reserves, the method of holding these, distribution of the cost of the reserves, whether prices and exact levels would be

[66]The basic study used by the group was done in ERS by W. Scott Steele and is reported in *The World Food Situation, op. cit.*, pp. 40–47.

[67]His proposal and others by a tripartite group of exports, the British North American Research Association, National Planning Association are reproduced in *International Food Reserves: Background and Current Proposals*, House Committee on Foreign Affairs, 93rd Congress, 2nd Session, October, 1974.

specified, the relation of reserves to food aid, and the role of inter-governmental organizations in controlling reserves was postponed. Whether a "tight" position which contained specific obligations (favored by Treasury) or a "loose" position which only commited governments to have reserves available and was separated from questions of price and ownership (favored by Agriculture) is reached at forthcoming negotiations will depend on what trans-governmental coalitions emerge.[68] The advocates of minimalist reserves count on the reluctance of the Soviet Union and PRC to participate, even in information sharing, and the unwillingness of the newly rich oil states to pay for reserves. State's strategy is to seek producer solidarity.[69] Essentially the more the United States provides benefits in the form of lower, stable prices for grains through a North American Reserves program, the more concessions it should tie to this policy on the part of those benefiting. For bargaining purposes one can imagine tying agriculture reform in poor countries, (policy point 5,) financial and information outflows from wealthy consumers (policy point 4), to U.S. cooperation in adjusting domestic policies (points 1 & 2) and participation in internationally programmed reserves under the World Food Council (point 3). But agreement on major options for a coherent U.S. policy has been extremely difficult to reach when the priorities of the different bureaucratic organizations are basically unreconciled.

Another important organizational problem is the complexity of coordinating policy even within the State department. The Bureau of Economic and Business Affairs ("E" bureau) has separate sections for formulating policy on trade, commercial promotion, finance, and food, although these are interlinked at higher levels. The "E" bureau in turn must coordinate with regional bureaus that have very different perspectives on issues, e.g., those who look to GATT vs. U.N. Conference on Trade and Development (UNCTAD) for trade adjustment proposals, and with a half-dozen agencies outside of State. In attempts to link issues, such as U.S. grain reserve policy and the border rules of other states (e.g., the EEC's Common Agricultural Policy), the list of agencies with perceived interests in these issues becomes enormous.

Two swords can cut the Gordian knot of interagency inertia. The complexity of coordinating policy, building international coalitions, and linking policies can be simplied by a leading personality solution. This solution, spotlighted by those with a "bureaucratic politics" perspective, a view held by most lower echelon "players" in Washington, has the departmental baron, Kissinger, Simon, or Butz "win" following a highest-level review or confrontation.[70] Policy outcomes depend on strength of personality and relations with the President. However accurate, such a view reinforces role expectations for policy-making that are neither stable nor rational. Moreover, it usually ignores the constraints on policy alternatives created by lowest-level interdepartmental bargaining and, more importantly, by widely perceived interests and structural interdependencies.

A more satisfactory "sword" is sound and detailed analysis. Analysis of the implications of the grain reserve question is key to policy formation, for example. To improve policy, the capacity for analysis must be enhanced in those organizational units that tend to take the full range of U.S. interests into account. This would mean providing for an independent research capacity either in State or an intra-agency group. Another organizational change to enhance policy coordination would be to have an interagency appointments committee to seek out and review candidates for the key food policy posts across the government (say those just below the assistant secretary level).

International Organization

Most of the international organizations that effect the global food system are listed in Figure 3 or are charted by Figure 4. The activities of these international organizations are growing in importance. In this review, following conventional definitions of international organization, I exclude discussion of agribusiness multinationals. But their presence as organizations with considerable activity and heavy stakes in global food issues should not be ignored.[71] UNICEF, UNDP, and WHO and non-

[68]After working since the 1960's to get rid of reserves, make the market a guide to production, and eliminate low income farmers, Agriculture adamantly opposes a return to government management and reserves. The key reserve issue is whether you have commodity agreements regulating or at least affecting prices. In effect, Agriculture does not oppose prices that are much higher than needed to stimulate production. This brings excess profits and capital gains to the most efficient (biggest) producers and high prices to consumers. Within Agriculture, however, there is serious division between FAS and ERS on this question.

[69]See the speech by Henry Kissinger, Los Angeles, January 24, 1975, Department of State, Bureau of Public Affairs, pp. 4–5.

[70]The bureaucratic politics way of viewing policy is described in, among other books, Morton Halperin, *Bureaucratic Politics and Foreign Policy* (Washington: Brookings, 1974). This view, emphasizing the "personality" of "players" was mentioned repeatedly in my interview of mid-level officials.

[71]Agribusiness representatives meet regularly with Agriculture officials and have served on government boards, such as the Cost of Living Council. They are the principal managers of food

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governmental international organizations such as Oxford Committee for Famine Relief (OXFAM) and the Red Cross also have important "program" responsibilities. They intervene directly in societies to improve agriculture and nutrition. Moreover, these organizations avoid many problems of bilateral interventionist aid, are reasonably efficient, and generally promote U.S. policy interests. American participation in international organizations occurs both through formal delegations and informal liaison within elite networks. American delegations, at larger public conclaves, such as the World Food Conference, tend to be large and unwieldy. At other meetings, such as preparatory sessions on the Conference or the Reserves meetings, delegations are smaller and more manageable. Inter-agency representation is common with State or Agriculture alternating as chairman. At the two preparatory sessions for the Rome Conference there were 12 U.S. members at each, six from State, three from Agriculture, others from AID, Treasury and the Senate staff. At the Conference itself State and Agriculture each were represented by 10 members, AID 3, Commerce 2, Treasury 1, and Congress 16. Perhaps because of the Democratic-Republican split between Congress and the Executive the involvement of Congress was highlighted by confrontation over U.S. food aid commitments. This also may account for the antagonistic interaction that characterizes the congressional role in food policy. It may also explain why the executive efforts in international organizations and in negotiations has been to avoid commitments involving congressional action.

The Food and Agriculture Organization (FAO) is the principal international organization on food issues, with participation in nearly all intergovernmental and transnational activities. Its modest 1975 budget, $50 million for core operations and $125 million for programs of research, health and assistance is small compared to billions in the USDA budget, e.g., for agricultural research $220 million; economic research, $22 million; foreign agricultural relations (largely marketing), $36 million; supply adjustment, $266 million; and food assistance, $1.5 billion.[72] The FAO has had close links with the USDA since its inception after World War II. It was housed in Washington until 1951 and has always had an American Director-General (DG) or deputy DG.[73] There is an informal elite network of personnel among USDA officials, foreign agriculture attaches and FAO civil servants. As a result the FAO has always been important as a network coordinating agency.

The FAO provides important research and information. Its studies in agricultural adjustment have aimed at finding new formulas for removing barriers to trade, and its research on fishery helped to establish counsels among countries in functional fish areas, e.g., in North Atlantic.[74] Along with the U.N. Development Program (UNDP) and the World Bank it has sponsored the Consultative Group for coordinating research at 10 centers around the world (see Figure 6, Appendix IX). It may be useful in establishing another Consultative Group for improving rural economic policies in food deficient countries. Beyond this the FAO has had but limited functions with respect to legislation and regulation. Its work to develop common standards of food labeling and content, *codex alimentarius*, for instance, is as much regulation as network coordinating, U.S. leadership and interest in the FAO has declined, perhaps less precipitously than in the U.N., as the interests and control of the poorest states have grown. Although the FAO was active in initiating proposals for a world food reserve program, the United States has avoided relying on the FAO to coordinate negotiations or to give it a role in managing a system. Three developments illustrate this avoidance. A World Food Council of about 25 members rather than the FAO is to be established for global food management thus limiting the influence of the "fourth world" and making management easier. Second, the Council is to be under the Economic and Social Council (ECOSOC) rather than the General Assembly. Finally, key countries met in London (at the International Wheat Council Offices) to work out arrangements before the formal meeting on reserves at FAO offices in Rome.[75] Clearly if an international grain reserve system is to be created, and one is needed given the problems created by supply fluctuations, the United States wants to protect its very large stake. Creating new institutions, ones with a veto system, weighted voting, or no power is the method. The new institutions and their organiza-

for tying world markets together, organizing global food shipping, promoting changes in consumption habits, and providing the technology for expanded, more effective, food production, distribution, and consumption.

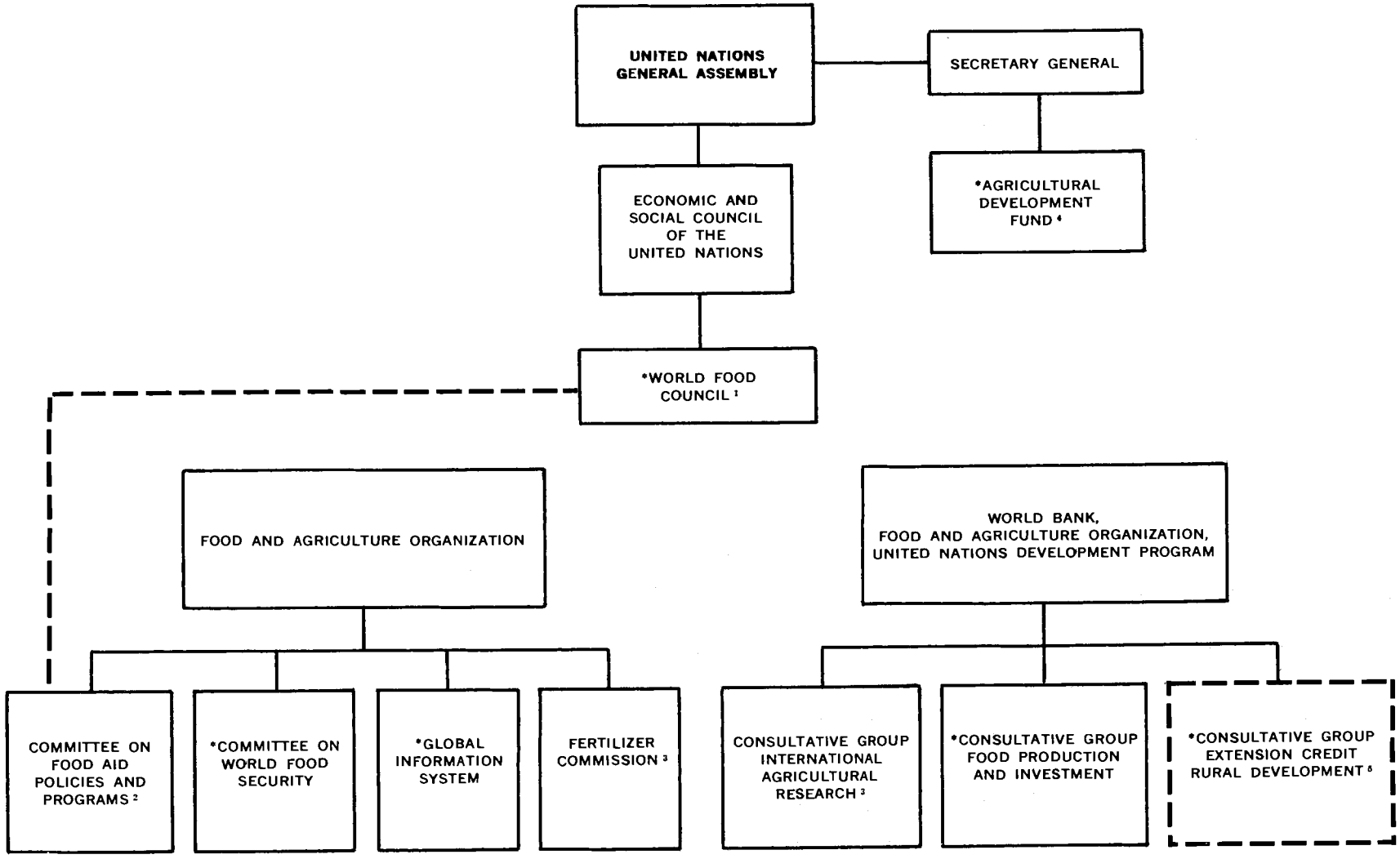
[72]From *The Budget of the United States Government, Fiscal Year 1975*, pp. 113–40. The P.L. 480 figure is from recent increases after February, 1974. Most of these expenses were lowest, though direct overseas science activities alone were $7 million. FAO budget figures are in *Program of Work and Budget for 1974–75*, FAO, July 1973.

[73]One Agricultural officer described the FAO's formation as the "establishment of an international wing of U.S.D.A." The FAO and the UN more generally have been a refuge for USDA officials with internationalist outlooks.

[74]See the FAO series on Agricultural Adjustment done for the 1973 World Conference. Robert Tetro, Senior Economist of the FAO, pointed out the importance of fishery research to me.

[75]FAO representatives were not invited to this meeting; their request to attend was declined by the United States, as host.

FIGURE 4.—ORGANIZATION WITH RESPONSIBILITY FOR FOLLOW-UP ACTION ON RECOMMENDATIONS BY THE WORLD FOOD CONFERENCE [76]



* New Institutions.
[1] About 25 members, nominated by ECOSOC, geographically representation, elected by UNGA, uses FAO Secretariat in Rome, with powers to coordinate, advise and receive reports.
[2] To be formed from the reconstituted Committee on World Food Program which now reports to ECOSOC.
[3] Program Strengthened.
[4] Called by United Nations Secretary General, governed by own Board.
[5] An organization with this title, or similar to it, is likely to be recommended in the future.

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tional setting after the World Food Conference are depicted in Figure 4. In addition, the International Wheat Convention signed in 1967 and continued without its price setting activities since 1969, and the companion Food Aid Convention are important for international network coordination. These agreements arising from the failure of the Kennedy Round to achieve Agriculture trade policies, and continuing efforts begun after World War II, will be superseded probably by an international reserve organization, unless reserve policy is separated from trade negotiations.[76] Since legislative and regulative functions have not worked or have been avoided in international food organizations thus far, it is likely that the "nationally held, internationally coordinated" principle for reserves will act to minimize the impact of reserves on national policy. But it is doubtful whether a coordinating role will be sufficient to make reserves work to expand available food when production is short and to contract supplies if a surplus exists. Of course, a commitment to coordinate only and have each country's reserves held as it chooses would allow the United States to participate without Congressional action. But guaranteeing Commodity Credit Corporation (CCC) funds for concessional sales to aid starving people is no real security if the food is outrageously expensive. A more robust solution, an international commodity marketing board would be a new and possibly valuable international organization.[77] It could restore many of the benefits of stable prices and consumer security that U.S. reserves brought in the 1950's and 1960's. It is a major alternative to the limited objectives of present U.S. leadership in international organizations.

Another policy goal that may best be handled through international organizational is the linkage of food and population issues. The United States and many Western countries have developed practices and techniques for voluntary population control that could be used in those countries with the most serious population pressures. In food deficient and poor countries, population growth remains rapid, ranging from two to three and one-half percent a year; only China has undertaken massive population control measures.

In the decade 1961–71 agricultural production actually declined in six countries: Congo, Jamaica, Jordan, Lesotho, Sarawak (Malaysia) and Yemen. In 26 others it grew less than population growth.[78] FAO projections from 1969–71 show demand in developing countries by 1985 far in excess of supply, with only some of the deficit made up by excess production in developed areas.[79] Hunger and malnutrition in the third world will not be avoided in the long run without population control. Yet bilateral pressure by tying P.L. 480 or other aid to population limitation programs is eschewed. It is judged to be either ineffectual, as current self-help conditions seem to be, or harmful, promoting negative reactions as states feel their autonomy threatened.[80] Yet the population issue may warrant violating presumptions against interfering in other societies. Indeed if assistance programs of substantial size were organized multilaterally on a formula grants basis, this might give leverage to leaders who abhor the consequences of crowding and rapid population growth. The size of technical assistance and food aid might be tied to the number of health-abortion-birth control clinics that were established or other even more direct indices of population control. Such a program, if it worked at all, would do so only through some international organization. And, if it were to be potent it might require (1) raising the U.S. and other countries aid to the most needy from three-tenths of one percent of GNP to something like one percent, and (2) pursuing domestic population control policies more vigorously, possibly with links to food subsidy policies, as an example.

Using organizations to shape "policy interdependence" among states is an effective way to respond to the issues of functional interdependence. Aligning policies across conventional domestic departments and unconventional state groupings to serve long term American interests will be a slow process requiring attention to both substantive and organizational arrangements.

Conclusion

Interdependence drives together states outside and agencies inside the U.S. government. Food has become a global issue with dozens of related policies linking hundreds of organizations. As Henry Kissinger was led to say, "Almost every economic

[76]From the *World Food Situation, op. cit.*, p. 91.

[77]The U.S. position could lead to this. The six points on reserve features outlined by Kissinger at the World Food Conference included protection against "price fluctuations" and "conditions for adding to reserves and for releasing from them". The details of the U.S. position and the decisions of the International Food Review Group remain to be worked out (March, 1975).

[78]See the Table 3 in the Annex for the list of these countries from *The State of Food and Agriculture, 1973*, pp. 23–24.

[79]*Assessment of the World Food Situation*, U.N. document E/CONF. 65/3, p. 90.

[80]While we have never ended food aid for failure to carry out vigorous self-help, we have ended aid when self-help went too far. Jamaica received modest Title II and then Title I aid. But when it raised bauxite prices and threatened agreements with a U.S. firm (whose Atlanta plant was built especially to process Jamaican bauxite and not suitable for substitutes from elsewhere) the Treasury moved to bloc further P.L. 480 shipments.

policy has profound foreign policy implications."[81] America's policy on food links our domestic policies with our foreign policies, our foreign policies with each other, and our foreign policies and those of other states. Food policies are an organizational responsibility in many government units, too many to describe in detail. The principal actors are State, Agriculture, and Treasury, each of which has one or more assistant secretaries actively involved. But consider the White House organization, where policy resolution occurs. The following units with responsibilities exist: Economic Policy Board, CEA, CIEP, OMB, NAC, and Special Trade Representative.[82] In addition there are two ad hoc interagency committees. Figure 5 provides a rough diagram of the major units responsible for policy formation.

With interdependence, if international, long term interests are to be examined adequately, policies must be made in an interagency framework. Below (Table 7) are a few issue links and an indication of the agencies that are (or should be) involved. Those marked with an asterisk indicate that a formal interagency framework has been established to review those issues and recommend policy adjustments.

The organizational changes to improve policy making in an interdependent world proposed earlier in this study lie principally in a strengthened interagency framework of responsibilities. The basic problem the changes aim to correct is not inadequate organization to be overcome by shuffling one or another agency or creating a new interdepartmental committee. Rather the problem is officials whose attitudes and procedures are wedded to past experiences and narrow identities. Although all those whom I interviewed for this study accepted the notion of interdependence, only a few were worried about shaping national policy or international organizations to deal with the challenges predicted for the next ten years. The task, therefore, is to foster greater comprehension by key officials of global interdependence and to provide them with the analysis necessary to respond intelligently to the changing world.

Policy making must then reflect this. The inertia of dangerous processes and the lag time for policy responses to occur requires policies founded on a future orientation and acceptance of global responsibilities. Most of the changes in agricultural production and human fertility are slow to occur. Innovations require 10–15 years.

TABLE 7.—INTERDEPENDENCE POLICY LINKS

Policy Linkage	*Primary Government Organizations Involved*
I. Domestic/Foreign	
1. Food production and export controls	Ag./State/Treas/STR
2. Consumer price inflation and food aid	Ag./OMB/State/CEA/NSC/Treas/AID
3. Reserve policy and price supports	Congress/Ag./State/Treas/CEA
II. Foreign/Foreign	
A. National	
1. Humanitarian food aid and military/diplomatic support	Ag./AID/State/NSC/Congress
2. Market promotion and export control	Ag./Treas./State/CIEP/CEA
B. International	
1. Food aid and foreign agric. development (incl. finance)	AID/State/Ag./Treas/Congress
2. International reserves, trade, and cost sharing	State/Ag./Treas./NSC/STR/CIEP

Henry Kissinger states:

> The interdependence that earlier fostered our prosperity and now threatens our decline can usher in a new period of progress if we perceive our common interest and act boldly to serve it. It requires a new level of political wisdom, a new standard of responsibility, and a new vigor of diplomacy.[83]

The recommendations for organizational change proposed by this study lie in three areas: personnel, resources, and coordination.

PERSONNEL

1. Many senior officers in State and Agriculture responsible for food policy have a weak understanding of the culture, outlook, and constituency pressure experienced within the other agency. Of the 13 Foreign Agricultural officers at GS-16 or above one had experience in the State Department; most have economics or marketing training. None of the three senior officers in the State Department's Office of Food Policy has had experience in Agriculture—most have backgrounds in economics and overseas assignments. The State and Agriculture Departments should encourage temporary assignments of their personnel to the other agency,

[81] "Kissinger on Oil, Food and Trade," *Business Week*, January 13, 1975, p. 66.

[82] NAC is the National Advisory Council on International Monetary and Financial Policies which reviews, among other things, proposed P.L. 480 agreements.

[83] Henry Kissinger, "A New National Partnership", speech at Los Angeles, January 24, 1975, *op. cit.*, p. 3.

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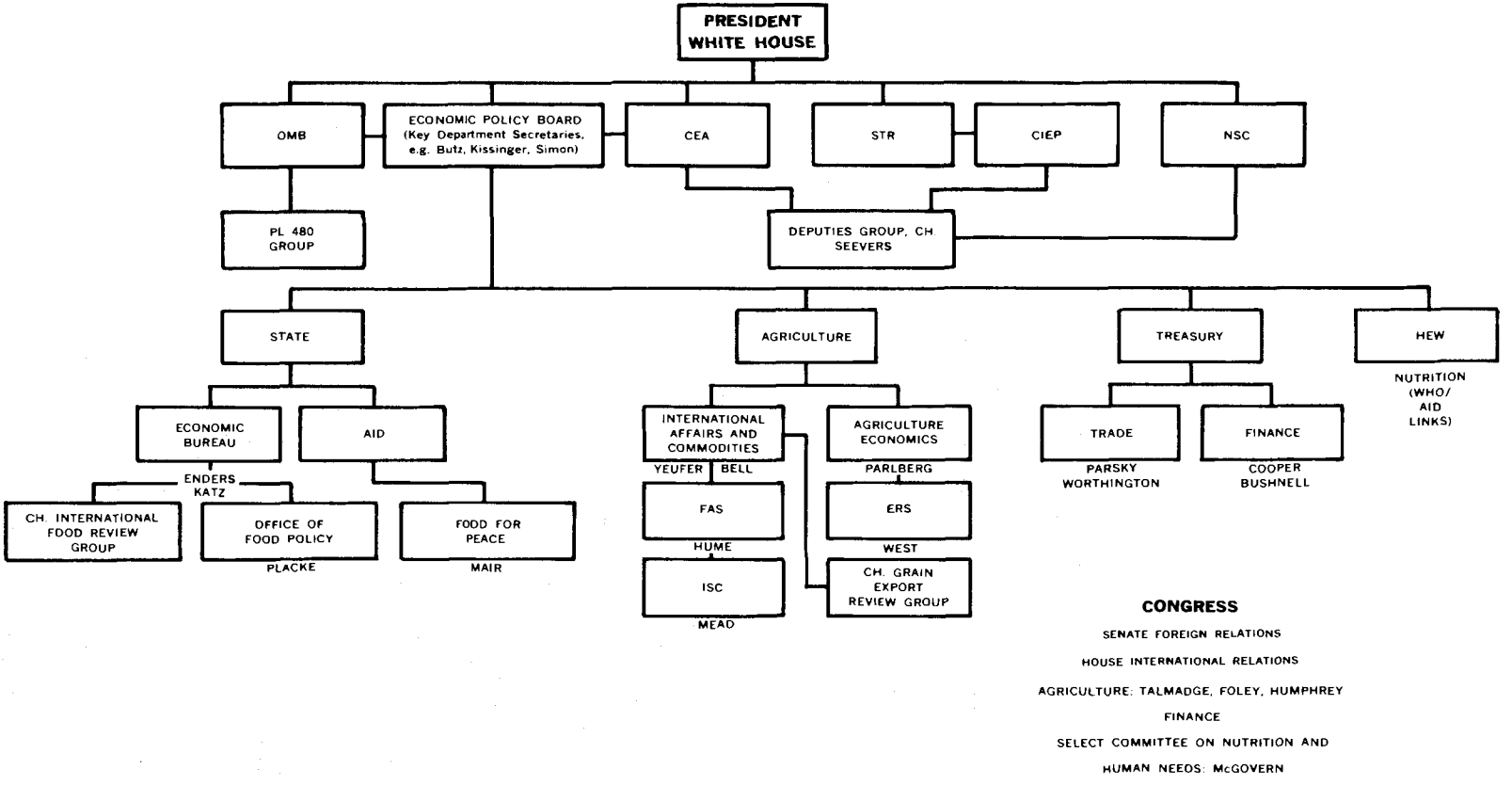
FIGURE 5.—FOREIGN FOOD POLICY AGENCIES OF THE U.S. GOVERNMENT (FEBRUARY 1975)



especially in planning positions. The Agriculture Department should seek to recruit people with more legal and social science training in addition to agricultural economics or farm management. This would make attachés and others more suitable for occasional assignments within State during their careers.

2. Continuity in functional specialities within State should be stressed more heavily. One need not be a specialist to have a continuing responsibility for food issues in both home and overseas posts. Opportunities for temporary assignments in agriculture development projects or food multinational firms should be possible.

RESOURCES

1. Analysis of trends and causal factors, agriculture productivity, demand elasticity, and other factors critical to sound judgments should be available for the major departments. Efforts to improve both the Agriculture (ERS) and State Departments' intelligence and research capacities should be made.

2. Planning is a common shibboleth of reform. Nevertheless, especially for longer-term food policy this is inadequate. S/P in State and the smaller staff in Agriculture should have enhanced personnel to undertake consultation and planning in this area.

COORDINATION

Four recommendations are proposed for changing or institutionalizing organizations; the rationale for three were discussed earlier.

1. An interagency appointments committee should be created to recommend persons for senior staff position that both deal with food policy and involve inter-agency coordination.

2. The Bureau of Economic and Business Affairs should be further expanded. Global issues require global analysis and policy adjustment. Regional bureaus, of necessity will become somewhat more administrators and less coordinators of policy. This will require suitable adjustments in State Department norms, in particular the mission of the Department must become less one of good relations among states and more of management of global problems.

3. There should be continued use of *ad hoc* coordination arrangements. The expectation is that, although the format may vary, these (a) will be continuing, (b) will have independent access to the President and, (c) can present positions on issues that take interdependence into account. In particular, the Deputies Group, either under CEA (with Seevers or his successor chairing it) or under CIEP or NSF should be institutionalized. This insures coordination of domestic and international policy considerations. The chairman should be someone outside the major departments and with direct access (when requested) to the President.

4. CIEP, and possibly STR, should be strengthened or abandoned. CIEP acts largely as a source of staff studies for the White House, and both lack leadership. Their staffs serve individual or positions with little independent decision-making responsibility.

These recommendations contain few novelties and would certainly be resisted by those wishing to protect the character and autonomy of departments. Their basic intent is to strengthen the sense of global responsibility and policy interdependence among policy makers.

The long-term implications of global interdependence in food upon the U.S. government can be more significant than the minor organizational alterations suggested here. In conjunction with interdependence in energy and materials, and with increased vulnerability of societies to the domestic policies of others (whether it be U.S. drug addiction dependent on Turkish agriculture policy or Japanese livestock growing dependent on U.S. feedgrain prices) management of global systems of production, distribution and consumption will become increasingly centralized and coordinated. Responsibility for managing these global systems will be demanded of governments. Decentralized, partly private actions that now play determining roles in food management will come under increased government regulation in order to meet obligations to other states, obligations acquired in the process of working out agreements for solving problems arising from resource interdependence and scarcity.

One source of the increased power of the U.S. President in the twentieth century has been the growing importance of foreign affairs and the consequent power the President derives from his special authority in this area. The politics of global interdependence is too complex for one man or even one office to handle. It has and will increasingly spawn bureaucratic institutions—interagency groups and intergovernmental committees. The nexus at which foreign and domestic policies are connected will be where policy is made. The State Department might in the last decades of this century, much like the President in the earlier period, come to wield special influence over policy previously considered domestic and outside its province. Agricultural price supports, energy taxations, and commitments for research and development may all be determined by State Department bargaining.

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These decisions will, whatever the role of the State Department, have an increasingly international component. An alternative model also might evolve, with U.S. foreign policy increasingly handled by "domestic" agencies that coordinate their domestic responsibilities with their foreign ones in intradepartmental bargaining. In such cases the domestic and international divisions of Agriculture, Treasury, the Federal Energy Administration and other government bodies would retain or develop the skills, intelligence and discretionary authority to work out between them coordinated policies for pursuing interdependent international and domestic objectives. Whether an increase in the role of the State Department in policies traditionally outside its sphere or the influence of "domestic" agencies over international affairs proves the more accurate forecast, the consequences of interdependence for policy-making will be real and should be planned for.

Efforts to escape interdependence may only postpone and exacerbate fundamental adjustments. Greater burdens will fall to the next generation of leaders whose options will be fewer. As Keohane and Nye remark, "succumbing to one form of interdependence may be the price one pays for avoiding another".[84] Food is one of the few major sources of U.S. leverage. It may be the last one effective in coping with problems of economic development and excessive population. Whether the amplitude of food in the world can be used to limit births rather than its absence to promote deaths is an overriding question challenging United States' and world policy.

[84]Robert O. Keohane and Joseph S. Nye, *op. cit.*, p. 61.

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Intentional and Unintentional Modification of the Atmosphere

Gordon J. MacDonald
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The atmosphere like the oceans represents a truly international resource. Unlike the oceans which only impinge on nations along their coastal boundaries, parcels of air move across national boundaries so that one nation's atmosphere can become another's in weeks and even hours. Despite the international character of the atmosphere, international law with respect to the atmosphere is nowhere as fully developed as is the law of the sea. The principal although not the only reason is the relatively recent development of air transportation.

Man inadvertently modifies the atmosphere any time he uses energy. The modification may take the form of changing the chemical composition of the air, the temperature and humidity, and even the amount of sunlight that penetrates to the earth's surface. The history of inadvertent changes is a long one. Primitive man polluted air with his cooking and warming fires. However, it was not until the large-scale use of coal for heating and cooking in 13th-century England that air pollution became a serious enough problem to warrant governmental regulation. The Industrial Revolution intensified the problems, beginning in the late 18th century and continuing until today.

The history of intentionally changing the atmosphere using known laws of nature is much shorter. In the late-1940s, the first work on increasing precipitation was started and only in 1960 and 1970 were relatively large efforts mounted to increase scientific and technical knowledge in the various ways of purposefully changing the atmospheric environment. In 1974 the only Federal law with respect to weather modification was the Weather Modification Reporting Act (PL 92–205) passed in 1971 which requires the reporting of non-Federal Government weather modification activities to the Department of Commerce.

When the atmosphere was subject only to the laws of nature, human laws on the rights of how the atmosphere was to be used were unnecessary. However, with man-induced changes, the need for establishing the legal precedents and institutional frameworks becomes important for all present and future users of the atmosphere. For the lower part of the atmosphere, national laws and regulations have been established to varying degrees by a growing number of nations. In the higher atmosphere, where man-made changes can be critical and global, controls and right of use have not been clearly established. By provisions of common law and international treaty, access to the atmosphere is under the complete control of the sovereignty directly underneath it. Since the atmosphere is always in a state of restless and largely unpredictable motion, the concept of sovereignty over the atmosphere, as contrasted with sovereignty over the air space, becomes to a large extent an empty notion.

Before taking up the complex organizational and institutional issues involved in both intentional and unintentional changes in the atmosphere, it is useful to review briefly the state of technical knowledge in both fields. Neither all pollutants nor all the ways in which the atmosphere can be changed present the same problems.

Air Pollution

The atmosphere is a mixture of gases and aerosols, the latter being the name given to small solid particles and liquid drops such as those that make up clouds. The natural atmosphere came into balance with itself over geologic aeons, but today man is introducing into the atmosphere gases and aerosols present naturally along with new and foreign substances. The effects of these materials, both natural and foreign, depend on their chemical nature, the chemical and physical changes they can

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undergo, their amounts in the atmosphere and the time they remain in the atmosphere. If the lifetime of a particular gas or aerosol is short enough, then any problems created are local in character. On the other hand, if the resident times, the lifetime in the atmosphere, are long, then the man-made substances may be spread regionally or globally as the substances move with the winds. Materials introduced at or near the surface of the earth can also diffuse upwards into the high regions of the atmosphere. This process is important because the resident times of certain pollutants increase rapidly with altitude. In the high atmosphere at altitudes above 18 to 20 kilometers, in the stratosphere, the lifetimes of small particles or gases that do not interact chemically can be a year or more. During such long periods the matter will spread over an entire hemisphere if not over the whole globe; thus, any problems created are truly international.

A natural common gas in the atmosphere is carbon dioxide. Its abundance is fairly uniform over the earth, but its concentration (in 1974 about 320 parts per million) has increased by about ten percent over the past 100 years. Most of this increase has been due to the burning of fossil fuels, coal, oil, and gas. Assuming a continued increase in consumption of such fuels, by the year 2000 the concentration will be about 20 percent greater than that of 1970. Carbon dioxide, since it is a natural compound present in the atmosphere over geologic aeons, does not pose a threat to humans, animals, or plants. However, the increasing levels of this gas may bring about significant shifts in climate since carbon dioxide influences in a major way the manner in which heat is distributed in the atmosphere. Thus, the production of carbon dioxide presents a global problem of long-term significance; long-term in this case implies at most a few decades.

A potential global problem with a much shorter time-scale is that associated with the introduction of chemical compounds used in spray cans, air conditioning, and refrigeration.[1] These compounds are extraordinarily stable; they do not undergo chemical or biological changes once released into the atmosphere. As these compounds drift upwards in the atmosphere they undergo reactions with the ultraviolet part of the incoming solar radiation. A series of chemical reactions takes place, the end result of which is the destruction of some fraction of the ozone in the stratosphere. Ozone, a molecule with three oxygen atoms rather than the two oxygen atoms we breathe, performs a life-preserving task as it acts as a shield against penetration of ultraviolet radiation that is highly damaging to biological materials. Indeed the removal of a small percentage of the ozone could have profound effects on agriculture and man. At present the rate of production of these highly stable compounds is about one megaton per year, principally in the industrialized world, and is increasing rapidly. Current estimates suggest significant effects at ground level in 10-to-15 years unless action is taken or unless the current understanding of the problem turns out to be incorrect.[2]

One of the best known atmospheric pollutants is sulfur dioxide. It gets into the air mostly from the burning of coal and oil and the smelting of sulfur-bearing minerals. In the vicinity of such sources the levels of sulfur dioxide can be high enough to damage vegetation and in certain meteorological conditions, particularly strong inversions, can be lethal to man and animals. However, sulfur dioxide is not only a local problem. It can be carried by the wind for some four-to-ten days before it is washed out of the atmosphere by rain or snow. During its travel in the atmosphere sulfur dioxide can react with water vapor, sunlight, and other gases to form a sulfuric acid mist. This substance can cause serious damage when inhaled and can damage plants, erode marble, and produce other product deterioration. In this way sulfur dioxide becomes a regional problem since during its period of travel the sulfur compounds may move a thousand kilometers. Thus, sulfur oxides emitted into the air in England may have significant ecological and health effects in Northern Europe because of the prevailing winds.

The above examples illustrate that air pollution can be a local, regional, or global problem. Table 1 further amplifies the complexities of controlling air pollution at the national, regional, and international level. Almost all pollutants could have some effect on climate, but the understanding of these effects is in a primitive state. Certain pollutants are known to have deleterious effects on humans, plants, animals, and materials over local and regional areas. In many cases, however, the magnitude of the effects is uncertain. The situation is further complicated by the fact that the individual pollutants cannot be considered separately since they often interact to produce new and potentially even more dangerous substances.

Weather and Climate Modification

Most efforts to change weather have been directed towards learning how to increase rainfall and snowfall. These efforts have been intensified by growing demands for food and the restrictions placed on food production by scarcities of fresh water. Current work follows the early experiments

[1]Rowland, S. 1974. Aerosol sprays and the ozone shield. NEW SCIENTIST 64:717–720.

[2]Ibid.

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TABLE 1.—CHARACTERISTICS OF MAJOR AIR POLLUTANTS.[3]

Pollutant	*Principal Man-made Sources*	*Estimated Man-made Emissions (million tons/year)*	*Atmospheric Times*	*Residence*	*Principal Means of Removal*	*Major Problem Areas*	
			Lower Atmosphere	*Higher Atmosphere (Stratosphere)*		*Global*	*Regional to Local*
Carbon Dioxide (CO_2)	Combustion of Fossil Fuels Including Gasoline	500,000	4 years	2 years	Biological Adsorption through Photosynthesis Absorption in Oceans	Accumulation in Atmosphere with Worldwide Climate Change	None Known
Carbon Monoxide (CO)	Fuel Combustion Particularly Auto Exhaust	250	0.1 to 3 years	Unknown	Bacteria Oxidation to CO_2	Accumulation or not? Role in Ozone Destruction in Stratosphere	Human Health Hazard
Freon and Related Gases (CCl_2F_2, CCl_3F, etc.)	Spray Cans Refrigerants Air Conditioners	1	40–100 years	Short	Breakdown in Stratosphere	Effect on Ozone in Stratosphere and Consequent Effects on Life	None Known
Sulfur Dioxide (SO_2)	Combustion of Fossil Fuels	160	4 to 10 days	Not Known but Probably Short	Oxidation to Sulfuric Acid and Sulfate Particles	Formation of Particles in Stratosphere and Effect on Climate	Human Health Hazard, Plant and Property Damage, General Ecological Effect by Acid Rain
Sulfuric Acid (H_2SO_4) and Sulfates	Combustion of Sulfur-bearing Gasoline, Reaction of Sulfur Oxide in Atmosphere	Unknown	4 to 10 days	Particles 2 years	Removal by Rain or Snow	Effect on Climate and Consequent Effects on Agricultural Productivity	Health Effect Plant and Property Damage, Ecological Damage

in which either dry ice (frozen carbon dioxide) or a smoke of silver iodide was introduced into a cloud where the temperature was below freezing; the effect of the introduced materials is to stimulate the formation of ice crystals. The crystals can grow sufficiently to drop out of the cloud reaching the surface as snow or rain.

In the middle-1970s, there was no real agreement among meteorologists about the efficacy of rainmaking despite serious efforts at evaluating physical and statistical data.[4] The problem arises because when material such as dry ice is introduced into the cloud and it rains or snows, one does not know whether the same rain or snow would have fallen without the introduction of foreign materials. Highly sophisticated statistical techniques have been employed to separate induced effects from those that would have occurred naturally but the results remain controversial.

My own evaluation of the situation with respect to the possibilities of rainmaking is similar to the position taken in the 1973 National Academy of Sciences study.[5] In certain meteorological situations, not completely understood, seeding can increase precipitation up to 30-to-40 percent over areas of some hundreds of square kilometers. For example, over more than 10 years seeding has apparently significantly increased rainfall from extratropical cyclones passing over California in the winter. On the other hand, seeding in Missouri and north-central Arkansas of summer clouds appears to have reduced rainfall in an area 180 miles in radius. In other circumstances seeding can have no effect or might even reduce the amount of rain or snow that otherwise would have fallen.

As far as the international ramifications of rainmaking are concerned, an important unresolved is-

[4]National Academy of Sciences-National Research Council. 1966. Weather and climate modification: problems and prospects. Washington, D.C. and National Academy of Sciences. 1973. Weather and climate modification problems and progress. Washington, D.C.

[5]Ibid. National Academy of Sciences. 1973.

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TABLE 1.—CHARACTERISTICS OF MAJOR AIR POLLUTANTS.[3] (CONTINUED)

Pollutant	*Principal Man-made Sources*	*Estimated Man-made Emissions (million tons/year)*	*Atmospheric Residence Times*		*Principal Means of Removal*	*Major Problem Areas*	
			Lower Atmosphere	*Higher Atmosphere (Stratosphere)*		*Global*	*Regional to Local*
Ozone (O_3)	Chemical Reaction of Auto Exhaust in Sunlight	Unknown	Hours to Months	0.1 to 2 years	Reduction to Molecular Oxygen (O_2)	Reaction with Other Gases to Remove Ozone Shield	Human Health, Plant Damage
Nitrogen Oxides (NO, NO_2, N_2O)	Combustion Both Autos and Stationary Sources	73	4 to 10 days	Unknown but Short Compared with 2 years	Oxidation to Nitric Acid and Nitrates	Effect on Ozone	Human Health, Plant Damage
Nitric Acid (HNO_3) and Nitrates	Reaction of Nitrogen Oxides with Ozone and Other Compounds	Unknown	4 to 10 days	Unknown Probably 1 to 2 years	Removal by Rain or Snow	Effects on Ozone and Particles	Human Health and Plant Damage
Hydrocarbon	Auto Exhaust Industrial Process	40	Variable	Unknown	Reaction in Sunlight	Production of Particles and Effect on Climate	Role in Smog Formation
Solid Particles	Industry, Agricultural Dust	200	Large Particles Less Than Few Days. Small Particles up to a a Month.	2 years	Rain and Snow	Possible Effect on Climate	
Heat	All Energy Uses	Equivalent to the Burning of about 10 Billion Tons of Coal in 1974	Not Known	Not Known	Eventual Radiation into Space	Possible Effect on Climate	Effect on Weather and Climate in Industrialized Regions

[3]Adapted and modified from Almqvist, B. 1974. An analysis of global air pollution. AMBIO 3:161–167.

sue is that of how far downwind do the effects persist. There is meager evidence that there are effects 200-to-300 kilometers downwind from the seeding region, but whether precipitation is increased or decreased that far downwind is not known.[6] Thus, in 1975 we do not know whether seeding near a nation's border will have an effect on its neighbor although such effects are suspected.

A variety of other means of changing weather have been explored. Hailstorms produce substantial agricultural damage each year and various techniques to reduce the intensity of hailstorms have been employed in the United States, Europe, and Argentina with uncertain results. A large effort in the Soviet Union using rockets and artillery to introduce chemicals into the clouds is reported to have reduced crop damage due to hail by as much as 60-to-80 percent.

Another weather modification effort of probably only local effect is the attempt to reduce lightning strikes that go from cloud to ground and are capable of starting forest fires. As in the case of hail suppression, encouraging results have been reported, but it is far from certain that use of these techniques can reliably reduce fire-causing lightning.

Of far greater international significance than rainmaking or hail and lightning suppression is the possibility of altering large storms, in particular hurricanes or typhoons. The possibility of such alterations raises the specter of guiding such storms for military purposes. However, potentially of even greater significance is the role tropical storms play in maintaining global climate. Tropical storms are an essential element in transferring energy from the warmer tropical regions to the colder middle latitudes. The entire global heat balance and thus climate depend on the moving of heat energy from the equatorial regions to the north and south. Because of this, tampering with the intensity of these storms could bring about significant shifts in global climate.

Hurricanes and typhoons can be very destructive to live and property, particularly when intense

[6]Ibid.

storms sweep over low-lying coastal areas. Some scientists believe that the maximum wind speeds in hurricanes can be reduced by seeding which uses chemical agents such as silver iodide. Based on this hypothesis, the United States launched Project Stormfury in which planes flying into hurricanes deposited the seeding agents. Of the half-dozen experiments on hurricanes which were carried out in the Gulf of Mexico and the south Atlantic, the most successful involved Hurricane Debbie in August 1969.[7] Seeding was followed by periods in which peak winds decreased substantially at levels at which the aircraft were flying. These experiments have led proponents of this kind of weather modification to be cautiously optimistic as to the prospects. In 1975, debate within the U.S. Government, including the National Security Council, the State Department, and the Department of Commerce, continued on the future of the program and on whether it should be shifted to Guam where typhoons are more frequent.

Intentional and unintentional atmospheric modfication in several ways presents similar problems. In both problem areas many scientific facts are unknown. Local and regional effects are clearly demonstrable for unintentional modification and probably so for precipitation enhancement. Global effects are much less certain but possibilities exist in both advertent and inadvertent modification; and these certainly require the attention of governments at the national and international level.

What complicates and often hampers discussion in these areas, either domestically or internationally, is the probabilistic nature of the problems. Decision-makers in the political arena are used to making decisions in the face of incomplete information. The situation becomes more complicated when the issues are in part scientific and technical. The scientist to a large extent is used to hard data that will prove or disprove a theory. He becomes increasingly uncomfortable in situations in which gaps in the data exist and the usual recourse is to call for more research. The decision-maker has to make a decision, and making no decision is one option. Furthermore, many in the political arena suppose that science can always arrive at a clean-cut answer. When dealing with the atmosphere, it is always important to recognize that great uncertainties will exist, yet failure to act may have far-reaching consequences. Probability is both a simple and sophisticated notion. Its true complexity needs to be understood for effective management of such complicated and poorly known systems as the atmosphere.

[7]Ibid. National Academy of Sciences. 1973.

Dimensions of the Problems in Atmospheric Modification—Domestic and International

The previous discussion emphasizes the facts that the atmosphere does not recognize national borders nor can changes in the atmosphere brought about by man necessarily be confined to any country. The international character of the atmosphere was recognized in the early 1900s by the creation of international organizations to provide for and encourage the free flow of information on weather conditions as an aid to individual nation's weather forecasting services. Today the World Meteorological Organization provides these functions in a manner that is generally applauded. The consequences of man's activities in the atmosphere and their international implications have only recently been recognized. Clearly, there is a problem of trans-boundary pollution where noxious substances generated in one country can cause physical and biological damage in another. Similarly, weather modification activities may adversely affect a nation's neighbor. Changes having a longer timescale could affect the whole planet. All of these damages carry with them economic costs. However, other more subtle economic factors are involved. A nation may wish to protect its own environment by placing regulations on emissions or on the quality of the ambient air. The cost of control can be borne by the polluters, the government, or some combination of the two. Which policy is chosen will affect that country's position with respect to international trade. The industry that must pay its own pollution control cost will be at a disadvantage with respect to the same industry in another country in which the pollution control expenses are borne by the government. Thus, in many ways the issues associated with air pollution are economic; although, of course, social and political considerations will influence to some extent the stringency of the regulations and the economic means by which they are to be financed.

With respect to trans-boundary air pollution, the United States in the 1930s set a precedent which in the future may cause difficulties for it and other nations. The Trail Smelter Arbitration arose out of a dispute between Great Britain, representing Canada, and the United States.[8] The issue concerned the generation of sulfur oxides by a smelter in British Columbia which were carried through a valley into the State of Washington. The sulfur oxides caused damage to orchards and crops on the

[8]Goldie, Lee. 1972. Development of an international environmental law—an appraisal. LAW, INSTITUTIONS AND THE GLOBAL ENVIRONMENT edited by J. Hargrove, Oceana Publications, Dobbs Ferry, 104–168.

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United States side of the border. The two governments decided to entrust the negotiation of indemnities to a special tribunal. The arbitration tribunal found for the United States. The opinion of the tribunal constitutes what is still the broadest judicial suggestion of international liability for trans-boundary pollution:

"... under principles of international law, as well as that of the U.S., no state has the right to use or permit the use of its territory in such a manner so as to cause damage to the property or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence".[9]

While the Trail Smelter case provides some guidance as to how trans-boundary pollution problems might be dealt with in the future, much remains to be done both in a bilateral sense with our two neighbors and also in the regional context. With respect to Canada, preliminary discussions have been held on air pollution problems in the Detroit-Windsor and Port Huron-Sarnia areas.[10] The key bilateral agency is the International Joint Commission (IJC), but its primary responsibility has been in water management. Further, the IJC has suffered over the years from understaffing and underfunding, a situation Canada tried unsuccessfully to remedy during the negotiations leading to the United States-Canadian Great Lakes Water Quality Agreement of 1972.[11]

The regional problems of air pollution were being addressed in 1975 by a group of Organization for Economic Cooperation and Development (OECD) countries.[12] The United States is not included, but the Environmental Protection Agency is following the work closely since the regional character of air pollution in the United States is becoming more apparent. The first step in the OECD study is to determine the source of air pollutants (principally sulfur oxides) and their final point of deposition. Early results indicate that Great Britain, the Netherlands, Belgium, and West and East Germany provide most of the emissions, although the final destination is as yet uncertain. A basic question arises as to how OECD is going to tackle the problem once the scientific work is completed. Great Britain, for example, has adopted the policy of using tall stacks and atmospheric dispersal, a much less expensive method of dealing with stationary-source pollution than the removal of pollutants before emission which is the policy of the United States in the mid-1970s.

The Trail Smelter case and the regional air pollution problems of Europe call attention to the economic problems associated with air pollution. Air pollution can cause damage to property and vegetation as well as to health, but there are also heavy costs involved in controlling pollution. Abatement costs can be estimated with some sense of reliability, but on the other hand the benefits are much more difficult to quantify, whether the benefits come in the form of better health, increased agricultural productivity, or the protection of materials. The costs of air pollution abatement are not small. The Council on Environmental Quality estimates that between 1973–1982 total pollution control will cost the United States about 195-billion in 1973 dollars.[13] The costs for other industrialized countries appear comparable (See Table 2) in that about one-to-two percent of the GNP will be devoted to pollution control in the next 10 years. However, the distribution of expenditures between air, water, and solid waste differs markedly among countries and, therefore, the burden on various industries also differs. For example, in the 1973–1982 time-span the United States will spend about $133 billion in controlling air pollution (See Table 3 for a breakdown of costs) or about 68 percent of the total pollution abatement cost. Great Britain will spend only 13 percent on air pollution control, but about 87 percent on water control. This disparity arises from the above mentioned British policy with respect to air emissions control and the very great scarcity of water resources in the United Kingdom. Similarly, Germany will spend about 16 percent on air emissions. These figures illustrate the very great differences geography makes in the development of environmental policy.

The figures in Table 3 illustrate two further points. In the United States the air pollution control costs are going to fall most heavily on the private sector in controlling automotive emissions and industrial and power plant pollutants. Additionally, these costs are going to rise substantially over the next 10 years; in 1982 air pollution control will cost almost six times more than it did in 1973 as the requirements of the 1970 Clean Air Act come into full force.

The economic costs of controlling air pollution are indeed high. However, most cost/benefit analyses with respect to the United States indicate even greater benefits. The Environmental Protection Agency estimated that with no pollution control the total damage attributable to air pollution was

[9]Bilder, R. 1972. Controlling Great Lakes pollution: a study in U.S.-Canadian environmental cooperation. LAW, INSTITUTIONS AND THE GLOBAL ENVIRONMENT edited by J. Hargrove, Oceana Publications, Dobbs Ferry, 294–380.

[10]Council on Environmental Quality. 1973. Fourth annual report: 338.

[11]Council on Environmental Quality. 1972. Third annual report: 82.

[12]OECD Observer. 1974. 70:12–13.

[13]Council on Environmental Quality. 1974. Fifth annual report: 175.

$16 billion in 1968 and would be $25 billion in 1977.[14] The benefit analyses must always be viewed with some skepticism because of the difficulties in quantification.

In comparison with unintentional modification the economic dimensions of intentional weather modification are indeed small. The total Federal funding for research and development in weather modification in fiscal year 1974 amounted to $17.4 million. Of this amount about one-fifth supported work of private contractors. The independent operators received about $750,000 from private sources, and their foreign operations totaled about $2.8 million. Thus, U.S.-based operations in weather modification in 1974 amounted to about $21 million with the bulk of the Federal funds going into research.

Despite the relatively small amounts of money involved in weather modification, this nascent technology is publicly and politically highly visible. In the U.S. public attention has focused on both hurricane modification and rainmaking. In the latter case numerous lawsuits have emerged as a result of actions taken by allegedly damaged parties. In addition rainmaking has been used for humanitarian purposes. In 1967 a small group of private contractors funded by AID and directed by members of the Naval Ordnance Test Station in China Lake, California, tried without success to relieve the drought in Bihar and Uttar Pradish Provinces in India in 1967. The United States using Air Force and Naval personnel attempted a drought relief effort in the Philippines which the Philippine Government judged to be very successful. Similar rainmaking operations were carried out by military personnel in Okinawa and the Azores.[15] Unfortunately, these operations were apparently linked to the use of rainmaking as a weapon of war in Southeast Asia, a subject to be dealt with later. In 1973 the policy of assistance through the use of weather modification changed as a result of a White House decision. One result of this decision was the denial of aid to the Sahelian States undergoing a severe drought on the grounds that rainmaking services could be obtained from commercial operators.[16]

International Trade Implications of Air Pollution Control Measures

As noted above, all measures to maintain or improve the quality of air have an economic impact. Certain specific issues bear directly on international trade and investment. If these cannot be resolved, then international economic relations may be damaged as could efforts to improve the environment. The United States, because of the relatively strong control measures enacted by Congress, is in a particularly vulnerable position with respect to trade with its leading partners as well as with Third World countries. The situation is similar to the disadvantages the United States has placed on itself with its liberal labor laws and such measures as the Occupational Safety and Health Act. The major issues in the mid-1970s include how to prevent pollution controls and their cost from distorting international trade, what policy to adopt toward the movement of capital investment towards potential pollution havens, how to reconcile environmental and economic development costs, and how to avoid damaging export markets of the Third World through strict environmental standards in the industrialized countries.

One obvious means of avoiding economic distortion in international trade would be for nations to adopt uniform pollution control standards. This question was debated vigorously in the Committee on the Environment of the OECD and other international forums. However, a number of problems arise in any consideration of uniform standards. Many of the Third World countries have not developed the interest, law, regulations or means of enforcement even though the urban centers in these countries experience episodes of air pollution more intense than those found in the developed countries.

Even among the industrialized Western nations there are numerous problems with uniform standards. Should the standards be set at one level so as to protect health or should there be two standards as mandated by the U.S. Clean Air Act, one to protect health and the other to protect property, vegetation, and aesthetics? Even if nations could agree on levels of air pollutants harmful to health, an agreement not reached in the mid-1970s, it is doubtful that countries with differing political, social, and economic traditions could agree on standards affecting aesthetic and other values.

TABLE 2.—COST OF POLLUTION CONTROL. TOTAL EXPENDITURES OF NEW PROGRAMS IN TERMS OF PERCENTAGE OF TOTAL GNP[17]

Country	*1971-75*	*1976-80*	*1971-80*
Germany	0.8		
Italy	0.4	1.3	0.9
Japan	3.0-5.5		
Netherlands	0.4	1.3	0.9
Sweden	0.5-0.9		
United Kingdom			0.3-0.5
United States	0.8	1.7	1.4

[17]OECD Observer. 1974. 71:35.

[14]Council on Environmental Quality. 1973. Fourth annual report: 78.

[15]United States Senate. Hearings before the Subcommittee on Oceans and International Environment of the Committee on Foreign Relations. January 25, and March 20, 1974. Government Printing Office. Washington, D. C. 1974, p. 46.

[16]Ibid., United States Senate, p. 116.

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TABLE 3.—AIR POLLUTION CONTROL COSTS IN THE UNITED STATES (IN BILLIONS OF 1973 DOLLARS)[18]

Sector/Medium	1973 O&M*	1973 Capital Costs	1973 Total	1973-82 O&M	1973-82 Capital Investments	1973-82 Total**
Public	0.1	0.1	0.2	3.8	1.7	5.5
Private						
Mobile	1.2	0.2	1.4	49.9	31.3	74.4
Stationary	1.0	1.0	2.0	31.2	16.3	53.5
Total	2.3	1.3	3.6	84.9	49.3	133.4

*Operating and Maintenance Costs
**O&M plus capital costs
[18]Council on Environmental Quality. 1974. Fifth annual report:175.

The strongest case for uniform air standards is made when pollution from one country crosses into another. Such standards need not be exactly uniform but strict enough to protect the neighbor. In the case of the United States and Canada, comparable ambient air quality standards have been established with Canada under its Clean Air Act of 1971 having set slightly stricter standards.[19]

Because of their importance in international trade, a case might be made for uniform standards on automobiles. However, even here the standards need not be exactly uniform since not all countries have the high urban concentration and the automobile population of the United States. In fact the standards set by the United States will certainly influence all nations selling automobiles in America.

The OECD in May 1972 recognized that industries could be put at competitive disadvantage by strict environmental controls, by subsidies in other countries, or by nontariff trade barriers such as frontier charges or export subsidies. As a result, the OECD adopted a set of guidelines for member countries. A significant element of the guidelines is the "polluter should pay" principle. This principle provides that the cost of pollution control should be reflected in the cost of the production or use of goods which cause pollution. These costs should not be financed by subsidy.

The OECD guidelines also address differences in pollution standards, recognizing that distortions could occur if a nation adopts such loose standards so as to become a "pollution haven." The OECD guidelines, while recognizing the difficulties with uniform standards, advocate that member countries attempt to "harmonize" national environmental policies.

The efficacy of the OECD approach is yet to be tested. For in fact, already substantial differences exist between nations in their legislative mandates and actions undertaken. For example, it is clear that the "no subsidy" guideline is being subverted in a variety of ways. OECD countries differ greatly in the method of treating depreciation allowances on pollution-control equipment. Table 4 illustrates the situation as of 1973.

In addition to the differential treatment of subsidies, there remains the question of the effect of different standards. On this point there is no agreement. In the United States a clear effort is being made to enforce the standards, although the legislated deadline in some cases has been relaxed by Congressional action. Other countries do not have this kind of legislated time-scale for compliance.

Even within the highly industrialized world represented in the OECD, there are substantial questions with regard to the trade implications of varying standards. Preliminary estimates indicate a maximum negative impact on U.S. exports of $2-to-3 billion in 1975 and 1976.[20] These estimates, however, are frought with uncertainties. Indeed, some work indicates a positive effect on balance of trade for the United States if countries adopt similar environmental control standards.[21]

Pressures for government intervention in the international marketplace will probably increase as nations consider environmental cleanup, particularly if the cleanup is scheduled to begin in a period of economic downturn. To the extent that government standards and investment by the private sector are roughly comparable among countries, then the effects among the major trading partners of the West will be minimal. However, there is the ever-present danger of use of environmental controls for the purposes of gaining trade advantage. While OECD provides a mechanism for consultation, there is no effective mechanism for influencing other nations other than through unilateral action.

In a real sense, the United States is at a great disadvantage in economic terms. The Clean Air Act of 1970 places very restrictive requirements both on stationary and mobile sources of emissions. No other major trading partner is under such legislative restrictions. Because of this, the U.S. Government should use every opportunity, whether through OECD or bilateral channels, to insure that the changing conditions and perceptions of the

[19]Council on Environmental Quality. 1973. Fourth annual report: p. 356.

[20]Ibid. Council on Environmental Quality, p. 360.
[21]Ibid. Council on Environmental Quality, p. 361.

1970s do not place it under intolerable burdens in competing in the international market.

Air Pollution Control Effects on the Third World

While the effects of air pollution control measures on the Western world's developed nations have undergone relatively extensive analyses, particularly by the OECD, little work has been undertaken to examine how environmental controls will affect the less-developed countries (LDCs). The LDCs are principally concerned with four problem areas. The aid donor countries may place environmental restrictions on their supported projects so that the added environmental protection costs will dilute economic gains resulting from the aid-sponsored projects. For example, if an international or national development assistance agency requires certain air pollution control measures, the receiving country may view this as a step to imposing the developed nation's values on itself with resultant adverse economic impact. A striking example is in the smelting of sulphide ores. Advanced countries, particularly the United States and Canada, would be put in a disadvantageous position if they helped in the financing of smelters in LDCs which did not have the pollution control requirements of the donor country.

Many of the developing nations depend on exports of primary resources. There is concern among the LDCs that air pollution control measures will reduce demand for these resources. For example, the phasing out of leaded gasoline in the industrialized countries is certain to bring about a lower demand and price for this commodity of significance to a number of LDCs. Similarly, sulfur oxide controls are likely to create a glut of sulfur and sulfuric acid; this will have an adverse impact on certain LDC economies. As recycling and waste recovery become more economical, the demands for a variety of raw materials will decrease and again the LDCs will suffer economically.

A third concern relates to the higher prices that the LDCs may be required to pay for goods produced in the developed world, whether these be automobiles or fertilizer. These added costs can only add to the deficit of payment burdens of the LDCs without any perceptible advantage to them. Such concerns will be reflected in the industrialized world, where countries may seek trade advantage by loosening pollution control requirements on products needed by the LDCs. Because of the strict air pollution requirements in the United States, this country is particularly vulnerable to loss of trade in the Third World.

Finally, the LDCs may see themselves as the natural pollution havens for industries in nations having firm air pollution controls. The implication of such action is the flow of capital from the developed countries into the Third World. However, the momentary advantages of lessened air pollution control must be weighed by any firm against the potential instability inherent in investing in the LDCs in the 1970s.

These issues were either openly discussed in the 1972 Stockholm Conference on the Human Environment by representatives of the LDCs or brought up in private sessions. Over the opposition of almost all aid-donor countries, the LDCs won approval at Stockholm of a recommendation calling for an increase in assistance ". . . adequate to meet the additional environmental requirements" of developed nations.[23] The United States voted against

[23]Council on Environmental Quality. 1972. Third annual report: 93.

TABLE 4.—DEPRECIATION ALLOWANCES FOR DEPRECIATION CONTROL EQUIPMENT[22]

Country	*Percentage and Time*
Canada	100 percent in 2 years
France	50 percent in 1 year for facilities built in 1968–74 in addition to normal depreciation
West Germany	50 percent in 5 years in addition to straight line depreciation
Japan	50 percent in 1 year in addition to accelerated depreciation
Sweden	No accelerated depreciation
United Kingdom	No accelerated depreciation
United States	100 percent in 5 years

[22]See footnote 20.

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this recommendation in order to establish the position that environmental protection costs are no different from other costs involved in assistance projects. As a result of the Stockholm action, the United States urged the Development Advisory Committee (DAC) of the OECD to develop a coordinated policy among donor nations with respect to environmental development aid to the LDCs. Two years after Stockholm, no such coordinated policy had emerged.

At Stockholm the developing countries advanced their solution to the problem of decreasing resource demands resulting from environmental controls in the developed world. In this proposal the LDCs would be "compensated" for any decline in exports that results from environmental protection action taken by advanced nations.[24] The United States vigorously opposed this proposal as a matter of principle since the U.S. has traditionally taken the position of not compensating other nations for their decrease in exports resulting from internal U.S. action. In taking this position the United States was virtually alone among the industrialized countries. At Stockholm the U.S. made it clear that it would not use environmental programs to reduce access to our markets or to use environmental concerns as a pretext for discriminatory trade policies. In the 1970s, the announced U.S. policy was to deal with any claim that U.S. measures violated its obligation to the General Agreements on Tariffs and Trade (GATT) through established GATT procedures. However, in the mid-1970s the problems with trade with the LDCs were just developing. Whether the internal mechanisms or the GATT agreements would be sufficient to deal with the variety of issues posed by air pollution control and the Third World seemed most uncertain. As the LDCs recognize the magnitude of the social cost brought about by air pollution, the problems of trade and aid from the industrialized world are certain to grow in significance.

Organization of the U.S. Government to Deal with Atmospheric Modification

In principle it would appear that the organization of the Federal Government to deal with air pollution is straightforward. The Environmental Protection Agency (EPA) was established as an independent agency by Reorganization Plan No. 3 of 1970. The prime purpose of the reorganization was to achieve an integration of a variety of research, monitoring, standard setting, and enforcement activities. Responsibilities for air pollution control are in the Office of the Assistant Administrator for Air and Waste Management. This office is supposed to develop national programs and technical policies as well as developing emission standards for stationary sources, setting of ambient standards for air quality and providing assistance and direction to the states. In fact, many of its functions are limited by the Clean Air Act of 1970. For example, the law sets the standards for then-known principal automotive emissions, carbon monoxide, hydrocarbons, and nitrogen oxides. Only Congressional action can bring about changes in these three emission standards, leaving EPA with a minimum of flexibility.

As indicated previously, the economic and trade impacts of regulations can be severe. Because of this EPA must coordinate its regulations with virtually all Governmental agencies but particularly with the Departments of Commerce and the Treasury. The coordination function is in principle the responsibility of the Domestic Council, but in many instances the Office of Management and Budget has the final say. Needless to add, the bureaucratic conflicts between EPA, which is designed to serve as the public's advocate for a livable environment, and the Department of Commerce with the mission to promote the Nation's economic development and technological advancement can be and often are brutal.

In addition to the line agencies with environmental responsibilities, the National Environmental Policy Act of 1969 created the Council on Environmental Quality (CEQ). This three-member group together with a small staff has the responsibility for developing for the Executive Office of the President policies to promote environmental quality, assessing changes or trends in the national environment and, like the Council of Economic Advisors, preparing an annual report for transmittal by the President to the Congress.

The creation of EPA eliminated a number of problems of coordination of regulations. Similarly, the establishment of CEQ helped ameliorate such problems by providing an organization within the Executive Office of the President that can "referee" disputes among involved agencies. In actual fact CEQ because of its small staff and other responsibilities has limited its coordinating role. The Office of Management and Budget (OMB) has continued to have the final say even on environmental regulations having international implications. In these considerations the Assistant Secretary for Economic and Business Affairs is rarely consulted and rarely does any other office in the State Department participate in the interagency considerations.

On the Congressional side, similar complexities exist with respect to jurisdiction, particularly in the House of Representatives. Almost every com-

[24] Ibid. p. 94.

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mittee in Congress exercises some role in environmental policy-making. In the Senate the oversight committee for the Environmental Protection Agency is the Committee on Public Works with the Subcommittee on Environmental Pollution having primary responsibility for legislation with respect to air pollution. This subcommittee in concert with the Committee on Interior and Insular Affairs oversees the operations of the CEQ. In the Senate, appropriations for both CEQ and EPA are dealt with by the Subcommittee on Agriculture, Environmental and Consumer Protection of the Appropriations Committee. In the House, air pollution falls under the jurisdiction of the Subcommittee on Public Health and the Environment of the Committee on Interstate and Foreign Commerce although other environmental concerns involve the Interior, Merchant Marine and Fisheries, and Public Works Committees. However, under the House reorganization of 1974, the research and development efforts in air pollution were assigned to the Committee on Science and Technology. In the House, under the 1975 reorganization the appropriations for EPA and CEQ are handled by the Subcommittee on Environment and Consumer Protection. Originally, the conservative Appropriations Committee assigned air pollution and other environmental affairs to the agricultural subcommittee, but the reform-minded 1975 Congress drastically changed responsibilities.

The organization for dealing with international air pollution matters is similarly complex. For the most part the actual cooperative activities are undertaken on an agency-to-agency arrangement with the counterpart agency in other countries. In EPA an Office of International Affairs was established in 1972 with the Associate Administrator of the Office reporting directly to the Administrator of the Agency. CEQ, since its inception, has always had a small staff of three or four persons who have had responsibilities for developing CEQ's position on international matters. Similarly, Commerce and Treasury have strong staffs on international matters and they interact with EPA and CEQ on environmental questions.

In 1974 the Department of State underwent a reorganization which will affect that agency's input into international air pollution matters. Under PL 93–126, passed in the fall of 1973, a Bureau of Oceans and International Environmental and Scientific Affairs was established and headed by an Assistant Secretary of State. The new bureau has three offices, one of which is for environmental and population affairs. This reorganization replaces a previous ad hoc arrangement in which environmental matters were dealt with by an office in the Bureau of International Scientific and Technological Affairs, then headed by a director rather than an Assistant Secretary. The small Office of Environmental Affairs was directed by Christian A. Herter, Jr., who simultaneously served as Special Assistant to the Secretary of State and chairman of the U.S. section of the International Joint Commission.

The new bureau has a broad charter in matters dealing with air pollution and is designated as a central point of contact for international policy and programs in this area. To what extent the Bureau can meet these responsibilities is still an open question, since in the past problems such as air pollution with a heavy technical and economic component have bureaucratically been taken over by other agencies of Government.

The new bureau will also be responsible for the Department of State's participation in any international activities in weather modification. Whether these programs would fall in the environmental office or under the Deputy Assistant Secretary for Scientific and Technological Affairs was uncertain early in 1975.

On international matters both for air pollution and weather modification the Congressional organization is straightforward. On the House side the Subcommittees on National Security Policy and Scientific Developments and on International Organizations and Movements of the Committee on International Relations have been active. In the Senate the Subcommittee on Oceans and the International Environment of the Committee on Foreign Relations has held extensive hearings on air pollution problems and weather modification. In the latter area, the persistent work of the Senate Subcommittee brought to light the bill concerning the use of rainmaking in Vietnam.

While CEQ and EPA serve as focal points for policy and action in the domestic area of air pollution control, there is no similar center of responsibility for weather modification. Table 5 lists the various Federal agencies having programs in weather modification and the general character of these programs. Seven agencies either have operational or research programs, but the total budget is less than $20 million per year.

This dispersed and small program is coordinated at least in theory by the Interagency Committee on Atmospheric Sciences (ICAS). At one time ICAS resided in the Executive Office of the President under the Federal Council on Science and Technology (FCST). With the abolition of the Office of Science and Technology in 1972, FCST and ICAS were transferred to the National Science Foundation, an agency supporting work in weather modification. The state of confusion resulting from the fragmentation of effort is further compounded in that each agency has its own partial authorizing and

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appropriation subcommittee in Congress. While these problems have been recognized in the past and various legislative remedies have been proposed by the Congress and from within the Executive, the Office of Management and Budget has consistently taken the position that weather modification is not important enough to warrant special legislation.

International Efforts in Air Pollution Control

The United Nations Conference on the Human Environment, held in Stockholm in 1972, has been the only forum where major responsibility for developing the United States' position was delegated to the Department of State. The line agencies have had responsibility for the origin, development and implementation of an agreed-upon action in other international settings. The reasons are fairly straightforward. Most problems of controlling air pollution are highly technical and the expertise resides with the agencies. Further, the U.S. experts knew their counterparts in comparable institutions of other countries. The agencies themselves and in particular EPA have developed their own not so small international bureaucracies. Even CEQ with a total professional staff of only 30 had four staff members working fulltime on environmental matters in the early 1970s. In interagency working groups preparing for an international meeting, representatives from the State Department are not only outgunned in a technical sense but also outmanned.

The Stockholm meeting presented a very different problem. A key political issue in 1971 and 1972 was the status of West and East Germany in a U.N.-sponsored conference. This delicate problem, which separated the East and West and eventually led to a boycott by most Eastern bloc countries at the Stockholm Conference, could be dealt with only in political terms through established diplomatic mechanisms. Because of this, the State Department played a key role in preparing for the Conference, although in the end the U.S. delegation was chaired by the Chairman of CEQ.

The results of the U.N. Conference illustrate the kinds of problems encountered when essentially technical proposals are used to achieve political ends. The Stockholm Conference recommended to the General Assembly that the environment be incorporated within the General Assembly by creating a Governing Council, an Environment Program Secretariat (UNEP) and an Environmental Fund. The policy guidance for development of programs comes from the Governing Council consisting of 58 member nations elected by the General Assembly. The membership has drawn heavily from the developing countries, a fact that has delayed the implementation of programs of prime concern to the U.S. For example, the United States has had considerable interest in expanding the monitoring of global air pollutants.[25] The United States has proposed a Global Environmental Monitoring System as well as an International Referral System for Sources of Environmental Information. UNEP has agreed to extend very limited assistance from the Environmental Fund to certain current monitoring efforts of other UN agencies. In the case of air pollution this has included minimal support for efforts by the World Meteorological Organization (WMO) and the World Health Organization (WHO) in developing countries.

To a large extent, the developing countries have viewed the Environmental Fund as provider of developmental assistance, a view strongly expressed at Stockholm and at the second session of the Governing Council in Nairobi in March 1974.[26] On the other hand, the Environmental Fund was established at the initiative of the United States, and America has contributed more than its usual U.N. share to the Fund. In 1973, $12 million was received, of which $4.3 million came from the United States; while in 1974 the same figures were about $20 million received with America contributing about $8 million or 40 percent.

The UNEP experience demonstrates that the lofty intentions of the United States in taking the lead in establishing the Fund to finance measures to protect the environment can be thwarted by the massive and largely inert international bureaucracy that characterizes many U.N. agencies. These difficulties are further compounded when U.S. goals run counter to the majority of the Governing Council. Further, there is no easy way out. The Fund was essentially a U.S. creation. The sponsoring units in Government, particularly the Environmental Office and the Bureau for International Organizational Affairs in the State Department, have a vested interest in the program; and the monies involved so far are not large enough to have secured the interest of the relevant Congressional committees.

A number of examples illustrate the importance of agency participation in international negotiation and follow-through. In the fall of 1970, a CEQ staff member noted that Tokyo and the Eastern United States suffered severe air pollution episodes at the same time. This led to the suggestion that a cooperative program in the environment with Japan might

[25]Council on Environmental Quality. 1974. Fifth annual report: 449.

[26]United Nations Environmental Programme. Report of the United Nations Environment Programme on its second session, Nairobi, 11 to 22 March 1974, UNEP/GC/EG.

TABLE 5.—AGENCY PROGRAMS IN WEATHER MODIFICATION

Activity	*Agency*
Preparation, Augmentation and Redistribution	Bureau of Reclamation (Interior) National Oceanic and Atmospheric Administration (NOAA) (Commerce) National Science Foundation (NSF)
Reduction of Severe Storm Winds	NOAA Navy
Hail Suppression	NOAA NSF
Fog Dispersal	Federal Aviation Administration (FAA) (Transportation) National Aeronautics and Space Administration (NASA) NSF Department of Defense (DOD)
Lightning Modification	Forest Service (Agriculture) NSF DOD

be productive, and a proposal for such a program was forwarded to the National Security Council. Affirmative action by that group led to the exchange of letters between President Nixon and Prime Minister Sato. There followed a series of ministerial level meetings in which CEQ chaired the preparatory work as well as the delegations. The follow-through work on air monitoring, controlling auto emissions, and the exchange of technical data was primarily the responsibility of EPA. Throughout the process, the State Department was kept informed but did not participate in a substantive way.

The preparation of the U.S.-U.S.S.R. environmental agreement proceeded in much the same fashion. When the 1972 summit was agreed upon, officials at CEQ made the suggestion to the NSC late in 1971 that an environmental agreement might be appropriate. After NSC clearance, discussions began between CEQ and the Ambassador for the U.S.S.R. The U.S. group that carried out the detailed negotiations with U.S.S.R. officials was again chaired by CEQ, and the agreement was finally signed in May 1972 between President Nixon and Chairman Podgorny. The follow-on work, for example, a detailed comparison between air pollution problems in St. Louis and Leningrad, has been the responsibility of EPA. As in the case of the Japanese meetings, EPA participated in a substantive way in the preparatory work and thus was in a good position to take on the actual responsibilities assumed by the U.S. Government.

A number of other bilateral negotiations with Mexico, Spain, West Germany, France, and Great Britain have had similar histories with strong participation by the policy-oriented group at CEQ and the action agency EPA. Comparable patterns of preparation and action have been followed with respect to U.S. participation in international bodies such as the Committee on the Challenges of Modern Society of NATO, the Economic Commission for Europe and the Organization for Economic Cooperation and Development. The latter body has played a particularly strong role in air pollution control because of the economic implications of pollution control measures, as has been discussed earlier.

EPA and CEQ have not been the only agencies to initiate agency-to-agency work on air pollution problems. Following the Congressional decision not to provide public funds for the prototype for a supersonic transport (SST), the Congress requested the Department of Transportation to carry out a study for the purpose of determining whether or not a fleet operation of SSTs would change the stratosphere in such a way as to cause harmful effects at ground level. The Department of Transportation initiated its Climatic Impact Assessment Program (CIAP) to evaluate existing scientific data and initiate new research programs. Recognizing that the possibility of stratospheric change was one of global concern, the Department of Transportation contacted the relevant agencies in a number of governments. Indeed, CIAP benefited greatly from government-sponsored research programs in Australia, Belgium, Canada, France, Japan, the United Kingdom, and the U.S.S.R. Additionally, the CIAP program stimulated two parallel overall studies abroad, one by the United Kingdom's Committee on the Meteorological Effects on Stratospheric Aircraft and one by the French Comite sur les Consequences des Vols Stratospheriques.

These studies will represent the technical base for any international regulations. The negotiations of regulation will involve serious political as well as technical consideration and undoubtedly will require active participation by the State Department

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as well as the NSC. Under usual circumstances the negotiations would be conducted under the auspices of a U.N. agency. Most nations are members of the International Civil Aviation Organization (ICAO) and as such are obligated under the Convention on International Civil Aviation to accept ICAO standards unless within a defined period a state files a "deviation" from the standard. The ICAO Council has indeed approved a report of its Air Navigation Commission recommending action to establish stratospheric operating standards. However, ICAO has turned to WMO for technical guidance, but at the WMO Executive Council meeting in June 1974, no action was taken.

The SST case illustrates how the United States through its own research activities can exert leverage on other governments on an issue of global significance. However, without strong U.S. leadership in the appropriate international forum, ICAO, little action is likely because of the conflicting interest of states with and without SSTs. Any negotiations will be hampered by the probabilistic nature of the scientific findings and the very possibility that the various studies will reach different conclusions. In this case, as of 1975, it is very probable that the United States could enter into negotiations with a clear view of the U.S. objectives, having good but incomplete technical information and having examined the various implications of proposed actions, but still fail to achieve its objectives without resorting to unilateral action such as banning landings of SSTs. Such unilateral action could have grave economic and political consequences. In this, as in other cases, negotiations between the principals would seem more likely to lead to global equity than relying on existing international organizations. The principal countries will have had research programs and will be in a position to judge the nature of the problem even though there may be scientific disagreement. The involvement of Third World countries, which may wish to fly one or two SSTs for prestige purposes will not have the technical backup or understanding. Negotiations within ICAO could be protracted with the possibility of one of the principals using Third World lack of knowledge to set sufficiently loose standards that could be harmful to U.S. interests. This result is less likely in direct U.S.-U.S.S.R.-U.K.-France negotiations.

In dealing with air pollution and other international environmental issues, the role of the policy and line agencies is central when the problems are largely technical. But every international action has its economic and political consequences. At one extreme is the CIAP activity which in its research was purely technical and a single agency could deal with its counterparts. At the other extreme was the Stockholm Conference, outlined by State as almost entirely a political activity. In the early 1970s, CEQ with its position within the Executive Office could effectively bring together the conflicting interests of the various internal bureaucracies with a resulting accommodation of views. In part, this was due to the fact that the members and staff of CEQ had some competency in the technical, political and economic aspects. But more important was CEQ's institutional setting, its ready access to the NSC, OMB and the Domestic Council. Unlike the line agencies, it was not a bureaucratic competitor in the usual sense. In several instances it could and did serve as an arbiter in defending the national interest in air pollution control. Whether it will continue to play this role or whether the strengthened State Department organization for environmental concerns will assert leadership will in the end depend not only on the institutional configuration but on the personalities involved.

Rainmaking in Southeast Asia—A Bureaucratic Nightmare

International actions in weather modification have been minor compared with those in air pollution control with one major exception—the use of rainmaking as a weapon of war by the United States in the Vietnam conflict. Weather modification has been discussed on occasion in the Executive Council of WMO, U.S. private contractors have worked for foreign governments, and the United States had conducted drought relief operations; but, as indicated above these appear to have been in support of military operations. While the overall impact of rainmaking in Southeast Asia appears on the whole to have been minor, the manner in which the operation was conducted provides useful insights into the operation of the Governmental bureaucracies dealing with technical issues.

Early in 1966, the National Academy of Sciences published a report which in a general way indicated that under some conditions rain could be induced when otherwise it would not have fallen.[27] As a result of work conducted mainly at the Naval Ordnance Test Station in China Lake, California, together with the Academy's favorable view on rainmaking, the Office of Defense Research and Engineering proposed a concept of using rainmaking techniques in Southeast Asia as a means of inhibiting the logistical operations of the North Vietnamese along the Ho Chi Minh Trails.[28] In October 1966 tests using specially designed seeding equipment developed at China Lake were conducted in the Laos Panhandle. It is not clear from the unclas-

[27]National Academy of Sciences-National Research Council. Weather and climate modification: problems and prospects. 1966. Washington, D. C.

[28]Hearings (see footnote 15), p. 92.

sified literature whether these tests had either NSC or State Department authorization, although a reading of the relevant Congressional hearings indicate that the State Department was not informed.

In November 1966, the Commander in Chief, Pacific, reported the tests completed and forwarded the results to Washington for evaluation by the Defense Department. The only persons outside the Security establishment given access to the data were members of the staff of the then-existent Office of Science and Technology and the President's Scientific Advisory Committee. This latter group recommended to President Johnson against the operational use of rainmaking techniques. The reasons were both technical and political. The results of the tests that had been conducted were inconclusive with respect to the efficacy of rainmaking, and the military usefulness of increased precipitation was doubtful. Most importantly, over the years close cooperation and exchange of weather data among almost all countries has been achieved. Meteorological data secured by other countries is of great aid to weather forecasting in the United States and the forecasts have a high economic value, certainly measured in the tens of billions of dollars. If it became known that the United States were using meteorological techniques as a weapon of war, then these cooperative efforts might be threatened with consequent economic penalties.

The White House, presumably through the then-National Security Advisor, Walt W. Rostow, authorized an operational phase which began on March 20, 1967, and was conducted each subsequent year during the rainy Southeast Asia monsoon season until July 5, 1972. The areas seeded were over Laos, Cambodia, and North and South Vietnam. Because the program was considered so politically sensitive, responsibilities for the program were lodged within that part of the Joint Chiefs of Staff responsible for covert operations. Reporting was instituted to limit knowledge of the program and the flights were reported through normal channels as reconnaissance flights. Special communications channels were used to describe the actual operations.

Since about 14,000 people were given access to information about the project over the six-year period, leaks appeared in the press; and in September 1971, Senator Claiborne Pell of Rhode Island as chairman of the Subcommittee on Oceans and the International Environment requested the Department of Defense to provide information with respect to the program.[29] By December DOD had replied that the relevant chairmen of the committees of Congress with primary responsibility for the Defense Department had been informed.

[29]Ibid. p. 108.

In March 1972, Senator Pell introduced a resolution that urged the Executive to seek an agreement with other countries prohibiting the use of weather modification as a weapon of war. An interagency group was set up to prepare a coordinated response, though in fact the views of NSC dominated. Basically, the position of the Executive was that the Under Secretaries' Committee had undertaken a study of weather modification in the spring of 1971, but that the study was not yet completed and therefore it had come to no conclusions with respect to military uses of weather modification. The reasons for this result included DOD's and NSC's strong reservations and the fact that members of the study group and most of the members of the Under Secretaries' Committee were not cleared for information with respect to the Southeast Asia operations and were not aware of them except through speculation in the press. The extreme level of classification made any meaningful investigation of the military uses of weather modification impossible even though the officials involved were in high positions within their respective agencies.

While the Executive study led to no action, hearings on the Pell resolution were held in July 1972, with Government officials in their OMB-cleared testimony opposing enactment of the resolution. The Senate, however, in July 1973, overwhelming adopted a slightly modified version of the Pell resolution by roll-call vote. The Executive Branch did not respond to the resolution so the issue was next joined at Secretary of State Henry Kissinger's confirmation hearings in September 1973 when the Secretary-designate was asked about the Senate resolution. The Secretary's reply came in the form of a November letter stating that it was not yet possible to provide a coordinated Executive Branch response to the Senate resolution.[30]

Senator Pell continued his pursuit of the issue by calling for further hearings in January 1974. As before, the Executive representatives were less than forthcoming. However, the Department of State assured the Committee that the President had directed the Department of Defense to carry out a study of the military aspects of weather and other environmental modification techniques.[31] Needless to say, Senator Pell and the public witnesses took a somewhat dim view of the Defense Department studying its own activities.

Finally, on March 20, 1974, the Defense Department provided Senator Pell's Subcommittee with a top secret briefing on weather modification activities in Southeast Asia. During the period from 1967 to 1972 a rainmaking program was carried out over Laos, Cambodia, and North and South Vietnam in

[30]Hearings (see footnote 15), p. 9.
[31]Ibid., p. 9.

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which 2,600 sorties were flown with the deposition of over 47,000 units.[32] While the rainmaking was supposed to hamper infiltration, there appears that the operation had minimal effect on the movement of men and supplies.

Because of the supposed political sensitivity of the operations, the number of high officials in Government that were aware of the activity was extremely limited. Indeed, Secretary of Defense Laird had to reverse his statement to the Foreign Relations Committee that rainmaking had not been used over North Vietnam. The story of rainmaking as a weapon of war in Southeast Asia became public when the top secret hearings were declassified on May 19, 1974.

The history of rainmaking in Southeast Asia clearly illustrates the problems inherent in the use of a new technology when such use carries with it multiple political implications. The technologists associated with the program oversold their product and for political reasons decision-makers decided to keep nondefense scientists from critically examining the program. The breakdown in communications between those in State Department with responsibilities for protecting the overall U.S. foreign policy position and the Defense Department became complete right at the time the program was initiated operationally.

The story of environmental warfare and its political implications did not end with the Pell hearings. The State Department during the spring of 1974 was desperately attempting to develop a disarmament proposal for the summer summit meeting. Over strong Defense objections, the Executive decided to put forward at the summit a proposal to the Soviets to engage in bilateral discussion on the banning of environmental warfare. The summit communique of July 3, 1974, announced a commitment that both countries would enter into talks on the subject. The decision to enter into these discussions was politically motivated. Because of a lack of an adequate technological input, some of the dangers of not limiting the scope of the discussions were overlooked. Indeed, the Soviets soon took advantage of the U.S. position or lack of one.

On August 4, 1974, Ambassador Gromyko introduced in the U.N. General Assembly a draft international convention which was circulated at the organizational session of the First Committee of the U.N. in September. The Soviet proposal is far-ranging and would ban such sensitive items as any action that would influence the electrical activity of the atmosphere or continuous acoustic or electromagnetic fields in the oceans and atmosphere. It also includes provisions which are specifically directed against real and alleged U.S. activities in Southeast Asia, such as the use of herbicides, rainmaking, and the bombing of dikes. A resolution endorsing the convention was adopted by the General Assembly against the wishes of the United States.

The Soviet proposal caught the U.S. Government completely by surprise, and the State Department with its inadequate technical resources and heavy reliance on the Department of Defense had to grapple with the question of how to deal with this politically embarrassing issue.

Organization for the Future

Air pollution and weather modification serve as examples of the kind of crosscutting problems that the Federal Government will have to deal with as the complexity of issues increases. Both issues are in part scientific and technical, but only in part. These issues are also of importance in an economic and political sense. How they are dealt with should not be solely in the province of the technocrats.

A consideration of the institutional framework for policy development in atmospheric modification brings into focus the relative roles of the Executive Office of the President, the line agencies, and the State Department. In the past the Executive Office, largely through CEQ has provided the initiatives and initial policy development with OMB and the Domestic Council largely responsible for the coordination. The line agencies have, of course, had the major responsibility for further developing proposals and then for implementing any agreement. The State Department's role with the exception of the Stockholm Conference has been one of dealing with diplomatic procedures and with the international political aspects of the issues.

In the early 1970's, CEQ as a new and unknown unit in the bureaucracy, was particularly adept in bringing forward new ideas on how to handle the international aspects of air pollution. However, its small staff and limited range of technical competency raise the question as to how will it play the innovative and coordinating role in international environmental matters in the future.

In addition to CEQ, several other units in the Executive Office became involved in consideration of atmospheric modification. These include NSC, the Council of Economic Advisors, the Domestic Council and OMB. Before its abolition the Office of Science and Technology provided the technical input. All of the units bring special expertise applicable to problems of atmospheric modification and similar technical-political-economic issues. This raises the question of whether a single policy-planning staff for the Executive Office might be a more

[32] Ibid., p. 102.

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appropriate mechanism for developing policy alternatives. In such a suggestion, the principals would remain with a small personal staff and continue their functions as spokesmen for the Administration as well as personal advisors to the President. They would draw upon the overall policy and planning staff for analysis of major policy issues and thus be able to rely on a broader range of expertise and talent than otherwise might be the case. Such an integrated staff could function more effectively in analyzing crosscutting issues than the present fragmented set of units in the Executive Office. Such an organizational mix presents its own problems. The executive director of such a policy planning staff would have to satisfy several masters and there would be the tendency of the principals to build up their own staffs. Whatever the merits of the proposed integrated staff, it seems clear that the current fragmented organization cannot adequately deal with complex issues having a highly technical component.

The State Department by its very nature and primary mission is not in the position to analyze adequately complex technical-economic-political questions. It can provide valuable support to the line agencies in overall political advice. In particular, a highly successful mode of operation has been the assignment of talented Foreign Service officers to the line agencies for a tour of duty in the agencies' international offices. Not only does this provide the agency with a regular State Department input but also gives the officer valuable experience in the workings of the domestic agencies.

In terms of international organization the weaknesses of the U.N. organizations and particularly the United Nations Environmental Programme argue that the United States should work within the context of bilateral agreements and within OECD, particularly on economic ramifications of environmental issues. In bilateral agreements agency-to-agency interaction with a minimum of State Department intervention appears to have worked out most successfully.

Conclusions

The wise use of the global air resources presents a welter of economic, political and technical issues. In the case of air pollution the most productive method relative to the international aspects has been that of agency to counterpart agency, primarily because of the technical expertise residing within the Environmental Protection Agency. With the reorganization of the State Department to deal with environmental matters late in 1974 and the recent creation of EPA, certainly no further reorganization in this area would seem needed as of early 1975.

While organizational arrangements appear satisfactory, there remains the continuing problem of the vulnerability of the United States in any economic sense. Here environmental policy development should always consider the potential adverse effects on international trade. The United States should use both OECD and the General Agreement on Tariffs and Trade (GATT) for dealing with possible discriminatory policies followed by its trading partners. Further, as a result of U.S. leadership in environmental research, America could expand its trade base in pollution control equipment as environmental awareness increases in other countries.

The situation with respect to weather modification is much less sanguine. Despite numerous promised studies there is as of early 1975 no domestic or international policy with respect to weather modification. It would appear that at least two agencies should be heavily involved in policy formulation, the National Oceanic and Atmospheric Administration and the Executive Office of the President, the latter if something resembling the Office of Science and Technology is re-created. In most cases the chief administrator of the lead agency (NOAA) is presumably in the best position to understand the complicated technical problems and to weigh the broad range of possible impacts. However, the formulation of a socially responsible public policy is not easy for an agency which may view its own survival as depending upon the achievement of clearly visible technical goals. Because of this it would be in our best interest to have within the Executive Office a group capable of examining policy in terms of overall national goals.

The problems associated with atmospheric modification clearly illustrate the difficulties of treating issues that involve economic, political, and technical considerations. Far too frequently policy is based on the enthusiasms of technocrats, as was the case of rainmaking in Indochina. On the other hand, the decision-maker may not recognize the probabilistic nature of much of science and that in all important issues there will be gaps in data and knowledge. Policy formulation in this arena will be of necessity incremental, requiring close interaction between the policy-oriented scientist and the technically aware decision-maker.

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Policy Process for Space Satellites

Eugene B. Skolnikoff
March 1975

Space satellites are taken in this essay to refer to applications of space in fields such as resources, meteorology, reconnaissance, navigation, and communications, as distinct from man-in-space programs (except as they might be necessary for applications), planetary probes, or purely research-oriented programs. A strict separation cannot, of course, be maintained for motivations are always mixed. Not only does any given program serve more than one hard objective (e.g., scientific satellites providing the necessary data for the design of later applications satellites), but more importantly, a variety of political objectives surround even the more prosaic applications program.

The fact that government-funded technological programs involve political interests is not a novel observation, but it is particularly apt with regard to space technology. The scale and scope of the U. S. civilian space program have been influenced by foreign policy objectives, at least in the early years, to a degree not matched by any other technology with the possible exception of atomic energy. Even many aspects of the military space efforts have served nonmilitary foreign policy as well as security purposes.

Space as a focus of foreign policy concern is one of those subjects that are a direct result of technological advance; it simply did not appear on the agenda before. Hence outer space activities have posed many novel problems for policymakers, and for the organization for determining policy. It may be argued that space issues would not have seemed as novel at first if we were better able to see patterns across issue areas. In any case, space is by now a "regular" area of attention in the making of foreign policy.

Space programs were made technically feasible by advances in propulsion technology that allowed the launch of meaningful payloads with thrust sufficient to reach orbital velocity or to escape earth's gravity altogether. Concommitant advances in miniaturization, control, and optics allowed increasing sophistication of space packages and correspondingly greater performance and capability. The original impetus for these developments was security needs in the form of boosters for nuclear weapons. But the civilian space program formally started in the context of a scientific effort—the International Geophysical Year (IGY), organized by the international scientific community. A relatively low-keyed open project for the development and launch of an artificial earth satellite, Project Vanguard, constituted the U.S. contribution to one of the scientific objectives of the IGY. Vanguard was consciously separated from military missile developments at the time; the U.S. Navy was the responsible development agency under overall direction of the National Science Foundation (NSF).

The Russian launch of Sputnik in October 1957, their contribution to this IGY objective, changed the political context completely. The surprise of the Russian achievement, especially in advance of the United States, with its military/economic/technological overtones and assiduous promotion of this achievement by the Soviet Union (validation of missile claims, evidence of technological and economic superiority) served to raise the space program to the arena of high politics. Suddenly this nation was convulsed in self-flagellation; military, education, science and space budgets were raised; and a new agency of government—NASA—was created to be responsible for a much larger civilian space program. Manned space programs were started, applications programs in meteorology and communications were begun, and in 1961 President Kennedy committed the United States to a manned landing on the moon within the decade.

The 1960s saw continuing attention and commitment to space activities, particularly on the part of the United States and the Soviet Union, the only two "space powers" with the resources and technology sufficient to mount substantial programs. The early years of the decade were characterized by an overt competition between the space powers,

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both with regard to lunar programs and to space applications. In the latter years, the drama of space achievements appeared to lessen as the public became inured to technological accomplishments, as the strategic military equality of both superpowers became more pronounced, and as nations faced new internal problems to which space technology appeared largely irrelevant. The budget for the U.S. civilian space program leveled off and then began its decline from a high of over $5 billion a year. The manned landing on the moon in 1969 seemed to cap the high-visibility, high-priority aspect of the space program, which it had dominated through the decade, often at the expense of other applications-oriented programs.

By the mid-1970s, the international political context for the space program has shifted substantially from what it had been between 1958 and 1965. The competitive aspects between the U.S. and U.S.S.R. have been greatly muted, as has the political attention paid to the program by the public and by governments. The U.S. civilian program has leveled off at approximately $3 billion per year (in current dollars), with probably at least an equivalent program within the DOD. The civilian program, in fact, has difficulty in justifying its long-term payoff, so that many aspects of NASA's program-planning and international activities are influenced by bureaucratic survival politics. The importance of demonstrating an economic payoff has been a major concern of NASA for many years and has influenced their national and international objectives substantially.

Both military and civilian programs today are characterized by attention to applications with demonstrable economic or security returns, and thus much less influenced by competitive prestige motives. One result is that the issues raised for foreign policy are now more often those traditionally associated with typical program areas: developing international rules of behavior, establishing acceptable operating mechanisms, and negotiating economic relationships. Moreover, space technology in most cases is applied to existing terrestrial technologies (e.g., communications and resource exploration) so that the issues are often familiar ones relating to ground rather than space relationships.

But, space still retains characteristics of a new and novel area of governmental attention, without a long history of international agreements that constrain or determine governmental behavior, and posing issues that are inherently and unavoidably international. In some cases, it serves to move issues previously thought of as largely domestic to the international arena (e.g., applications of resource satellites for crop monitoring, resource exploration, geophysical mapping, urban planning, etc.). And it poses questions of international control and management directly and sharply.

Perhaps more important, mankind's ability to use the international resource of space for its needs creates new opportunities for contributing to the development of a viable international political system able to cope with the terrestrial problems that are so fundamental and so intractable.

The suggested outline for the conference papers will be followed for the remainder of this essay. Various space satellite programs will be considered for illustration, with specific references when appropriate. Communications satellites will receive some attention, but will not provide a major focus since they are the subject of another paper. Reference will also be made to other space programs, such as research probes and the space shuttle.

The Nature of the International Interdependence

1. The fundamental physical characteristic of the space environment is its international, or more precisely, non-national character. Space is non-appropriable, though the moon and other non-terrestrial bodies could, in principle, be appropriated by nations. This non-national character does not of itself link nations in dependency relations, for it means that nations can operate in space unilaterally without infringing on the rights of other nations. However, there is a sense in which non-national makes more logical an inter-national approach and validates a global interest on the part of all nations. Hence, it has been natural for the U.N. to become the forum for discussions and agreements ratifying rules of behavior in outer space.

More substantial interdependence arises from space satellite applications. In the first instance, this interdependence is physically based since the technologies may require ground stations in different countries, imply country-to-country relationships (e.g., communications), be used in an international environment (e.g., navigation, meteorology), or produce information about one country, but available to or under the control of another (remote-sensing data).

However, as the technologies become operating systems, the dependencies also become social or economic in character. Telecommunications satellites become essential aspects of national economies; if weather satellites are able to produce, say, reliable two-week forecasts, many national decisions will be dependent on that information; when navigation satellites are in place, many transportation systems will come to depend on them; reconnaissance satellites are critical elements now in assuring stability of deterrence, and would be more

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critical for encouraging compliance with and acceptance of arms control agreements.

When international organizations have become involved in space satellite systems, other social forms of interdependence are created. Intelsat for communications and WMO for meteorological satellites are the best examples. The United States has become tied by treaty and rules into inter-governmental mechanisms associated with the technologies, and thereby dependent on its partners in the organization.

In addition to formal intergovernmental mechanisms, there are informal transnational relationships that are simply less clear but no less real dependencies. The relations among telecommunications ministries constrained U.S. policy for communications satellites. Relations among the world's weather bureaus had an important effect on U.S. policy toward space activities in the World Meteorological Organization (WMO). These are not strictly speaking dependency relationships, yet the degree of prior interdependence heavily conditioned developments in the new technology.

2. The nature of the social aspects of space dependencies are largely economic, though also political as in the case of reconnaissance satellites mentioned and in the conduct of international organizations concerned with space systems.

3. The geographical scope of dependencies can be global, but can also be bilateral in nature, depending on the nature of the technology and on who participates. Meteorological satellites are essentially global in nature, though any given country may or may not participate in the system and receive satellite photographs. But the satellites provide near-global coverage.

Communications satellites also can have global coverage, but unless there are a transmitter and a receiver in a particular country, that country is not part of the system. Where there are links, each participant is dependent on continued participation by the others to have an operating system to those other countries. That is, communication requires at least two partners.

Navigation satellites are likely to be regional in their coverage, but do not depend physically on participation by other countries. However, if an entire system, such as North Atlantic air traffic control, is dependent on the satellites, all countries flying those routes will have to be tied in for maximum effectiveness.

Similarly, other satellite systems have the capacity for global coverage, but in most cases do not require it for operation. Rather, it can be a matter of national decision whether or not to participate.

Two other factors must be noted. One is that some of the space technologies can provide information about other countries whether or not those nations agree to join the system; any remote sensing satellite system has that characteristic (reconnaissance satellites, earth resource satellites). The other point, however, is that terrestrial cooperation is usually required, even for remote sensing satellite systems. Some of the applications of earth resource satellites, for example, may require ground truth data either to calibrate the system at the outset, or even for continued surveillance.

4. The U.S. vulnerability in space satellite systems necessarily varies with the system but is generally low on physical or technical grounds compared to that of other countries. That is, the United States generally has a dominant position in the technology and in the means to launch the system. Other countries, therefore, have considerable incentive to cooperate with the United States; in some cases, their cooperation is not even required on technical grounds. Only the communications satellite system is vulnerable to technical action by a system participant, though for some of the other systems noncooperation could greatly delay the realization of operating systems (e.g., meteorology, earth resources).

The nature of U.S. vulnerability is not fully defined, of course, on technological grounds. The technological lead of the United States, coupled with its objective to exploit the technologies for economic, political, or other motives leads it to have more dependence on other countries than might otherwise be the case. This dependence comes about through the possibility of united action by others in international organizations concerned with the technology, such as Intelsat or the WMO; or by the promulgation of international rules in the U.N. that would work to the detriment of U.S. interests, for example, a ban on remote sensing without permission of the sensed country; or by unwillingness to provide the international resources the U.S. believes necessary, for example by action of the International Telecommunications Union (ITU) denying a frequency allocation for a space system. Such actions are of varying probability, but constitute the chief nature of direct U.S. vulnerability.

There is a more indirect form of vulnerability of the United States in which a country attempts to influence the policy towards one issue by pressure on a completely different chessboard. Concurrent action on multiple chessboards is not easy, but in some ways is more feasible for a small country with something specific to bargain with than for large industrialized countries with apparently greater power, but much greater complexity of policy formulation for bargaining purposes.

5. Vulnerability patterns are not symmetrical, except to some extent with those of the Soviet Union.

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Most other countries, including industrialized countries, are much more dependent on U.S. behavior with regard to these systems than the United States is in reverse. The Soviet Union could have a similar degree of invulnerability as the United States, but has chosen, for whatever reasons, not to emphasize to the same extent international space applications in its programs.

6. The interdependencies are largely *not* zero-sum. That is, benefits to the United States from a weather satellite system or a communications system do not imply disbenefits to others. Quite the reverse.

Likely conflicts also are not zero-sum in the sense that there are not likely to be any or few beneficiaries from preventing the operation of a satellite system.

In a few cases, there may be zero-sum situations. For example, in the design of the coverage of the satellite communication system, conflict arose as to whether the system would be subsidized to allow third-world coverage even though existing traffic did not justify it. Developing countries benefited thereby at the expense of the industrialized countries. Similarly, conflict over awards for the equipment development for Intelsat were zero-sum in character, and tend to be so for hardware procurement in general.

Also, the organizational and legal arrangements for the data collected from earth resources satellites could generate conflict, and could be of a zero-sum character. Some of the information collected and analyzed could have important real-time implications: for example, information on crop estimates that could affect grain market prices or trade deals. That information, if available on a selective basis, could provide substantial benefits to one at the expense of another. The same would be true of less time-sensitive information, such as data on likely location of resources, if available on a restricted basis to those able to exploit it.

Most space satellite applications presently foreseen are under active development or actually in place. Communications satellites, both civilian and military, have been in use for many years and new generations are coming along. Reconnaissance satellites also are in active use by at least the U.S. and U.S.S.R. Meteorological satellites are also functioning, though the capability for reliable forecasting is still in the future. Navigation satellites are being planned, and earth resources satellites are in the experimental phase.

Except for communications and reconnaissance satellites which have been operating for several years, the major issues to be dealt with must be settled in the near future. Central questions about appropriate international organizational forms and legal rules of behavior will be pressing, especially for earth resources, navigation, and direct broadcasting systems.

Earth resources satellite systems in particular pose archetypical issues for U.S. foreign policy, with possible long-term consequences hard to quantify in advance. These remote-sensing satellite systems have the potential of providing valuable information at relatively low cost that would be useful to a nation in a variety of areas: resource exploration, crop forecasts, crop and forest disease detection, land use planning, water resource planning, ice/snow cover reporting, iceberg siting, forest estimation, pollution monitoring, among others.

There is another side to the coin: the information obtained through the satellites also could have security implications. Though the U.S. and U.S.S.R. both have their own reconnaissance satellite systems, earth resource satellite information can provide military data, for example, about Pakistan for India, or about North Korea for South Korea, or about Egypt for Israel, or vice-versa. How good the data are depends on the sensing devices and, in particular, on the resolution of the equipment. Even the experimental equipment of ERTS-1 provided information that could have such security value.

In addition, the information about a nation's resources, crops, and forests, has traditionally been considered to be under national control, a principle now enshrined in international law by resolution of the U.N. General Assembly. Such information in the hands of others, especially if the country itself does not have the information or does not know how to interpret it, could be a powerful weapon for economic exploitation.

The information directly from the satellite—the raw data—is not itself immediately usable. Processing is required, through the use of computers and ultimately trained interpretation. Technical competence is required, as well as extensive ground processing technology.

Thus, some of the main issues for remote-sensing earth resource satellites are seen:

a. How should the conflict between the freedom for peaceful activities in outer space be reconciled with the rights of nations to control information about their natural resources? Do nations have a right to "sense" another without prior permission? If they do, what rights does the "sensed" state have to the resulting information?

b. What organizational entity should be established, if any, to own and/or manage the space segment of an operating system?

c. What organizational entity or entities should be established, if any, to own and/or operate the ground segment of an operating system?

d. Whatever the organization, what rules should

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be established with regard to design and operation of the space segment (e.g., tradeoff between space and ground sophistication; resolution and other capabilities of space system; direct readout or tape storage or both; on-board control of coverage, or control by the landing nation? The relationship of these issues to the objectives of military reconnaissance systems is evident.

e. Whatever the organization, what rules should be established with regard to design and operation of the ground segment (e.g., ownership of raw or processed data; control of dissemination of data and under what conditions; technical assistance; self-support)?

f. Where does the U.S. interest lie: encouraging international ownership and control, or exploiting the technology through a series of bilateral relationships, or some middle ground? What should be the relationship between this U.S.-developed technology and American industrial interests?

g. Should the United States even proceed with developing this technology, which is yet unproven economically, when essentially similar information could be made available from reconnaissance satellites which are already in place and justified from a budgetary standpoint on other grounds?

These issues are presently under discussion in the context of the Outer Space Committee of the U.N., and within the U.S. government, with negotiations and some decisions likely in 1975. As noted, though the negotiations will not loom high on the foreign policy agenda in terms of short-term importance, the long-term significance in a resource-hungry world with dangerous local conflict situations could be substantial.

American Interests Involved

Different space programs call forth different degrees of agreement on U.S. interests, and thus different questions about the policy process. Leaving communications satellites aside and focusing on the major purposes of the technologies, meteorological, navigation, and reconnaissance satellite systems tend by now to lie toward the end of the spectrum in which there is strong interest-based consensus. That is, there is widespread agreement that the output of these systems are or will be useful to U.S. interest. They will also be useful to other nations, but as noted they do not involve zero-sum tradeoffs.

This was not always the case with reconnaissance satellites when questions were raised as to the provocative nature of surveillance, the moral right to observe another nation without permission, and the possibility that the resulting information might be used as a pretext, or rationale, for a preemptive attack on the Soviet Union. It was also seen by some as a necessary component of a first-strike capability, and thus a spur to the arms race. As discussed earlier, the arms standoff between the U.S. and Soviet Union, which effectively precludes a first-strike capability at present, and the importance of the technology in the arms control context, have effectively muted those concerns. In addition, the Soviet Union, which first proposed to ban reconnaissance satellites operating without permission of the state being observed abandoned its opposition, presumably when it developed its own reconnaissance program.

Meteorological satellites do not offer much interest-based or moral discord now, but conceivably could in the future. As noted, if weather forecasts become more reliable, as they are likely to do, weather satellite systems will become essential economic tools for nations. At that time, a system that is U.S.-managed, even if based in an international organization, may create dependency relationships with consequent potential for political unease among other countries. Within the United States, there is likely to be disagreement between those who want to maximize the dependence on the United States for other political purposes, and those who wish to maximize the international collective nature of the system as a way of strengthening international values.

Earth resources satellite systems do not offer as much agreement on interests as the others, though battle lines are not yet clearly formed. There are several sources of actual or potential conflict, some interest-based and some of a "moral" character. In schematic form, these are:

INTEREST-BASED ISSUES

1. preserving advantages to U.S. economic interests (mineral exploitation, advance harvest information) that could be afforded by monopolizing the technology, vs. allowing U.S. interests to compete in an open situation in which it has no advantage accorded by early information. In extreme form the first proposition takes the position that the ERTS system should be scrapped in favor of capitalizing on the potential of the existing *secret* reconnaissance satellite system;

2. maintaining ERTS as a national system operated by the United States, with a series of bilateral agreements with other countries, to preserve U.S. dominance and pay for the system, vs. internationalizing the system with resulting reduced U.S. influence and control, and possible delays, reduced effectiveness, and higher costs;

3. providing for complete openness of information and of the results of subsequent processing

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which would support U.S. industry's favorable competitive position, provide more information about badly needed resources, as well as apparently supporting the moral concept of an "open" world, vs. placing information under the ownership of the country concerned to be used as it sees fit.

4. preserving the data processing requirement in the private sector to match U.S. technological advantage in that area, vs. providing technical assistance to enable other countries to perform that function themselves;

5. limiting equipment design for an ERTS system to prevent the capabilities of reconnaissance satellite systems from becoming known by inference, vs. optimizing ERTS design to maximize the useful information.

6. agreeing to internationally-established rules about rights of remote sensing and control of information in order to realize an operating system, even if those rules adversely affect other remote sensing applications such as weather and reconnaissance satellites, vs. refusing to go along with any such limitations whatever the voting lineup.

MORAL ISSUES

1. internationalizing earth resource systems on grounds of the international nature of the technology and its results, the potential value of the product for all countries, and as a means of using America's technological lead for the long-term goal of building a viable international system, vs. maximizing U.S. national short-term interests, by emphasizing the national nature of a program;

2. improving image of U.S. openness and instilling confidence in U.S. motives vs. maximizing U.S. economic objectives;

3. using U.S. technology as a means of assisting poorer countries and moving toward greater equity in the distribution of wealth, vs. assisting poorer countries ultimately by maximizing U.S. economic objectives.

Thus, there are substantial possibilities for disagreement on U.S. interests with regard to earth resource satellite systems (somewhat parallel to the issues arising in the case of direct broadcasting satellites).

The focus here in analyzing U.S. interests has been on the substantive purposes of the technological systems. There are other aspects of space systems that lead to questions about U.S. interests and that apply to some extent to all space and other technologically-oriented government programs.

One is the competition for equipment development and procurement contracts. A U.S.-dominated and operated system is likely to maximize procurement through U.S. firms (on competitive grounds because of the U.S. lead), while an internationally-managed system may decide to apportion contracts on a geographical basis.

Another source of interest-based disagreement can be found in bureaucratic politics. The particular international solution sought for a given system may determine the relative position of domestic bureaucracies. Making WMO the responsible organization for weather satellites served to maximize the role of the then U.S. Weather Bureau in meteorological satellite systems. A bilateral approach to earth resource systems is likely to maximize NASA's continuing role in that technology, while the creation of a new international organization for earth resource satellite systems is likely to mean in time that NASA has a more minor service relationship. Obviously, if ERTS satellites are scrapped, in favor of using secret reconnaissance satellites of the DOD, NASA's role is completely removed.

There are other aspects of the space program, somewhat outside the scope of this essay, that deserve brief mention.

From the beginning, the civilian space program has included an important scientific research component. Though often adversely affected by budgetary needs of other program objectives, the scientific program has continued, with planetary probes, x-ray and other satellites, and with scientific experiments performed in connection with the manned space program. All of the applications programs as well as the manned space programs required research and experimentation prior to system design and deployment, so that research was an essential component.

Following substantial interest-based consensus on the scientific aspects of the space program in the early years, disagreement developed within and outside the scientific community over the relative size of U.S. R&D resources devoted to space-related activities compared to other research objectives. There was also confusion in the scientific community; many scientists believed the whole space program should be justified only on scientific grounds and thus objected to the priorities actually accorded other space objectives than research.

As total resources for space have been cut, this conflict among scientists over the space budget has largely disappeared, though there still remains some conflict over the scale of resources that should be allocated to the space program for scientific research purposes out of total federal R&D funds. The scientific portions of the program are planned in conjunction with representatives of the scientific community, notably the Space Sciences Board of the National Academy of Sciences (NAS). The close international ties of scientists, especially in the framework of the International Council of Scientific Unions (ICSU) and its space science arm,

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the Committee for Space Research (COSPAR), serves to engage the international scientific community in the research aspects of the program. NASA also arranges for launch of experiments designed by scientists in other countries and for periodic reports to COSPAR. A reasonable consensus among scientists is maintained on the details of the space science program.

Other aspects of the space program, such as manned space projects and the space shuttle have considerable interest-based disagreement. Support largely takes the form of industrial interest in continuation of a substantial space commitment for economic reasons, and bureaucratic interest on the part of NASA in preserving its mission and budgets. There is also some support from elements that want to preserve the U.S. lead in space technology for prestige purposes, especially vis-à-vis the Soviet Union, and ultimately in the belief that it will contribute to U.S. dominance in trade of high-technology products. Others support a substantial program on the philosophical grounds that it continues to represent a new frontier for man that the United States has a responsibility to advance.

Opposition arises on the grounds of opportunity costs for use of the resources being allocated to space, and the conviction that the prestige, competition, spinoff, and new frontier arguments are no longer of great weight. It is interesting to observe that the space shuttle program, justified publicly in large measure as a cost-saving device, will only have that characteristic if there is a good-sized space program in the mid-1980s to which the shuttle can be applied. Thus, it serves a strong bureaucratic motive. It is also interesting that the United States accepted a substantial role for Western Europe in the space shuttle program, thus providing, inter alia, an international commitment as a hedge against the possibility of growing opposition within the United States.

Lastly, it should be noted that after long years of opposition to a joint U.S./U.S.S.R. manned space project, NASA agreed to such a proposal (a joint launch and docking effort), presumably in part at least as a way of mobilizing political support from another sector of the government.

In sum, it appears that the space program, and particularly the satellite applications, fall at various places on the spectrum between interest-based consensus and interest-based disagreement. Several bring forth substantial consensus, particularly on the need for an international approach to system management. However, in those applications in which national interests that do not overwhelmingly dictate an international solution can be identified, the discord could easily dominate. And even those with strong international imperatives and consensus at early stages of development can at a later stage lead to disagreement as special interests become articulated, or as the effectiveness of the international solution comes into question.

The degree to which the U.S. policy process for these space satellite systems and for other aspects of the space program have adequately reflected collective interests in dealing with them in part turns on a definition of collective and special interests that is not useful here. Certainly, the early years of the space program, both civilian and military, were characterized by an overwhelming sense of the significance of space achievements for U.S. foreign policy and security needs. Seeing these as collective needs, the policy process was then clearly intended to serve collective needs. Whether it did so adequately must turn on a more differentiated analysis of those collective interests and how they were articulated.

The need for space accomplishments as an apparently agreed goal of the public, Congress, and the Executive Branch, and even of groups such as the scientific community (though there was more dissent in that element than perhaps any other),[1] led to the relatively conflict-free allocation of substantial resources for space during roughly the first half-dozen years. In fact, the popularity of space expenditures, and the opportunities it afforded for political posturing in support of the production of collective goods, led many political figures to use it to enhance their own position. The result was strong agreement between the executive and legislative branches, especially in the early Kennedy years. Prior to that time, the Congress was in fact pressuring the Eisenhower Administration to do more than was being proposed. The Democratic party in the 1960 campaign made much of the unavoidably thin accomplishments to that date of the space program.

The result of this consensus, the resources being made available, and an important additional factor —the technocratic nature of the task that involved a minimum of social disruption (thus a minimum of political cost)—led to a policy process at once both reasonably rational (within technocratic goals) and dominated by the technical agencies most concerned (NASA and DOD). Even the state of the economy helped, since the need for infusion of public funds to stimulate a lagging economy led those concerned with economic matters in the Administration and Congress to welcome space expenditures. That domination of the policy process by the technical operating agencies continues to this day.

The policy process did, however, have some important built-in constraints stemming directly from

[1]Poll of AAAS members, *Science*, Vol. 145, 24 July 1964, p. 368.

the pressure for achievements, coupled with the technical agency domination and the complex technical nature of the decisions to be made, the latter serving to support continued domination by the same agencies.

The first important element was the strongly nationalistic caste imparted to space activities by perceptions of the U.S./U.S.S.R. competition in both civilian and military spheres. Notwithstanding the explicit injunction built into the 1958 Space Act that:

> The aeronautical and space activities of the U.S. shall be conducted so as to contribute materially to . . . (7) cooperation by the U.S. with other nations and groups of nations in work done pursuant to this act and in the peaceful applications of the results thereof . . .[2]

the civilian program was conducted largely in ways to enhance the perception of U.S. prowess. Early possibilities of a substantial joint effort with the Europeans were never seriously examined, though the Europeans were invited to participate in the U.S. program on a piecemeal basis. Collaboration with the U.S.S.R. was frequently proposed, but even with Presidential interest when Kennedy assumed office, these ideas were given short shrift and barely considered by the dominant bureaucracies involved. The actual proposals for collaboration that emerged were always so minor as to give little substance to any subsequent agreement and to fail to command high-level attention.

On the military side, the pressure to use space technology to serve the arms confrontations with the Soviet Union dominated any other considerations throughout the first space decade.

Over time, the civilian space program developed a substantial network of bilateral agreements with other countries (with 74 countries by 1969), but always in ways that brought those countries into the U.S. program and that did not materially dilute the image or independence of the U.S. effort.

The need to demonstrate economic payoff of space, a very powerful motive for NASA, also led that agency to emphasize relationships likely to bring additional business to U.S. firms and to play down proposals that might establish competing competence in other countries.

Whether this emphasis on a U.S. program was the wisest policy or not, it was an inevitable result of the policy process in which those representing U.S. foreign policy interests (and also foreign interests) were relatively minor actors. Their role tended to be more often one of facilitating decisions made by others rather than presenting viable policy options.

There are many reasons for this situation, most of which have already been given: the pressure for national action growing out of the U.S./U.S.S.R. political/military confrontation, and the technical nature of the task, which makes it easy to mobilize bureaucracy along fairly clear and definable lines. Technical objectives have the great virtue of being amenable to sharp definition, with progress apparently easy to measure quantitatively. They are particularly potent when they also serve a reasonably clear political objective. Detailed political alternatives are necessarily fuzzier, future oriented, with many uncertain variables, and thus, difficult to defend, especially if they run counter to or would require modification or delay of the technological objectives.

The complex, esoteric nature of the technology is also a factor. In an important sense, the technological agencies and their beholden industrial contractors are able to maintain a near-monopoly of information which makes it difficult for representatives of other interests to challenge effectively any given policy preference of those agencies or to develop options to be considered. Even the White House science structure (the President's Special Assistant for Science and Technology and the President's Science Advisory Committee), strong in the late 1950's and early 1960's, found great difficulty in mobilizing adequate information to challenge NASA decisions when that agency had determined its preferences. The State Department, always very weak in technical competence, found itself even weaker in policy debates. The White House apparatus no longer exists, and State Department technological competence has not materially improved today.

The momentum of ongoing programs is also important as a source of policy initiative of operating agencies, as is the depth of their interest in an issue which allows them to commit more manpower to it. Not only are the Department of State's concerns necessarily more diffuse, but the scale of priorities is different. The details of international space programs are simply not seen as significant issues by comparison to geographically-oriented political questions. Among other things, this means that it is difficult to gain the attention of senior officials in order to develop greater influence in the policy process.

It must, however, be added that even if the State Department were able to be more effective in space policy debates, it is not clear that the policy outcomes would have been very different. The dominance of the U.S./U.S.S.R. competition was such that within State the policy lineup gave preference to a nationalistic U.S. stance over an internationalist approach to space issues. For example, in the first year of the Kennedy Administration, a substantial effort was launched by the new top echelon of

[2] PL 85–568 (section 102(c)), July 29, 1958.

the Department with the strong support of the White House, to use space activities, at least in part, as a way of strengthening the U.N. Extensive discussions brought forth only a proposal to expand development of meteorological satellites and atmospheric research under U.N. auspices in the WMO (the concurrent proposal for communications satellites was announced at the U.N. but left outside the U.N. structure in a U.S.-dominated organization). Though this was a useful and logical initiative, it was the only subject area in which there was obvious interest-based consensus for such an approach. It was also one in which the possibilities of disagreement were far in the future. Thus, nothing was proposed that involved any modification of political objectives from what had been already dominant. Even then, there was some dissent over the extent of the role for the WMO as opposed to the non-governmental scientific community. WMO was eventually given the primary role by means of informal transnational lobbying by the U.S. Weather Bureau (against official U.S. policy) which had a dominant role in WMO affairs and wanted to enhance that organization's, and thus its own, power and responsibility.

Within State, the role and influence of that part of the bureaucracy intended to represent international organization interests of the United States, the Bureau of International Organization Affairs, was and is weak and ineffectual, thus further reducing possible influence in the policy process.

Under the insistence of the Congress, especially Senator Lyndon Johnson, the Eisenhower Administration agreed to a White House policy structure for space in the Space Act of 1958. It was called the National Aeronautics and Space Council (NASC), and was intended to parallel the NSC in structure and function, with the President as chairman. Had it operated as presumably intended as a way of keeping high-level attention to space questions it might have made some difference in representing foreign policy options. But the Council was doomed from the start. Eisenhower did not want it, and made no use of it. Under Kennedy, the structure was changed to make Vice President Johnson the chairman. He did bring a staff together and attempted to provide policy oversight for the space program. The Council played a role in policy for communications satellites, but that was its only lasting substantive involvement. Its policy presence declined precipitously once Johnson became President, and it has since been abolished.

There was, however, continued White House involvement in space decision making through the National Security Council (NSC) and, while it existed, the President's Science Advisory Committee (PSAC) and later the Office of Science and Technology (OST). NSC involvement continues actively to this day. When it is engaged, or its staff takes an interest, the influence can be substantial. But it, too, is hampered by poor ability to develop policy options effectively and in time.

President Nixon's staff on foreign economic policy has also been engaged in space policy, primarily on issues of export of technology.

The relations with the scientific community in policymaking for space are also of interest since scientific information represents some of the collective goods the space program is designed to produce. The early ties with the scientific community were excellent since, as noted, the origins of the U.S. program were in the context of the IGY organized by the international scientific community. However, as the full-scale U.S. program grew, the scientific community's role in policy-making became greatly attenuated.

NASA resisted the creation of any kind of internal science advisory committee, which might have given scientists a policy voice in overall program direction. Instead, NASA and DOD elected to use the Space Science Board (SSB) of the NAS (created in 1958) as their advisors on the research aspects of the space program and as the responsible contact to the international scientific community.

The relationship has been a good one, but it is clear that SSB recommendations are advisory only, and are but one input into the policy process for but one facet of the space program.

PSAC also represented an involvement by scientists in the policy process, though the Committee was careful not to act simply as representatives of the scientific community. Their role necessarily was restricted to a few major issues (e.g., the design of the space act in 1958, analysis of the best plan for a lunar landing) and to assessing the quality, particularly of booster programs, in the early years. Their policy role and influence decreased with time as the space and defense buraucracies expanded.

Scientists and engineers were of course heavily involved in space-related activities in a direct way as employees of the bureaucracy or of contractor firms. A substantial interest group was created in industry and universities (in 1964 estimated as 5 percent of all scientists and engineers), heavily dependent on space funding for support for R&D. The advanced nature of the technology involved made this group peculiarly dependent on continuation of space activities since their competence was not easily transferable to other objectives. In conjunction with affected industry, they became a substantial special interest group exerting pressure, particularly on the Congress for continued space expenditures.

Other scientists, including some dependent on space, became quite critical of the size of space funding, and formed some of the opposition to

space in the mid- and late-1960's, especially when internal U.S. social problems moved higher on the agenda. There was little effective organization of this opposition, however, and NASA continued to find it possible to cut research expenditures wanted in favor of the lunar program when overall budgets required.

Aerospace industry became another substantial special interest, affecting both military and civilian programs. In the traditional way, Congressmen came to be champions of space, depending on the payoffs in their districts. The location of the manned space center in Houston was determined by the Congressional influence of Texas Congressmen. The importance of this effect has decreased along with the relative decrease in space agency budgets.

Even the organizational pattern of NASA played a role in some space policy decisions. The technical method chosen to go to the moon was heavily influenced by the structure of NASA laboratories since a different choice (NASA chose the lunar rendezvous method) would have involved a costly laboratory reorganization given the personalities involved. What other effects this factor may have had, or still have, cannot be estimated on available information.

Probability Dimensions of Issues from U.S. Point of View

By and large, space satellite issues are not time-sensitive in the way found in other policy areas. Space technology can contribute to the resolution of uncertainty that is relevant elsewhere (e.g., pollution monitoring, arms monitoring, atmospheric changes) but of itself it presents fewer problems related to urgency or uncertainty.

The primary time dependencies arise in two ways: (1) space applications in which data may have a value based on immediate impending events (storm warnings) or where priority of knowledge is itself valuable (crop forecasts), or (2) when space satellites may need to be available on a stand-by basis for urgent monitoring requirements. Both of these situations are relevant to the design of the organizations responsible for managing the technologies, but are not fundamental issues of uncertainty.

There is one other area of uncertainty deserving mention. It is the possibility that space activities themselves will prove to have serious environmental effects of a cumulative or of a one-shot nature. Project Westford—the injection of copper filaments into orbit for military communication purposes—presented a problem of the latter kind; the danger of ozone depletion from the exhausts of frequent space shuttle firings an example of the former.

In both cases, the effects can be thought of as externalities requiring adequate estimation, and representation of the dangers in the decision process. The agency proponents of the programs should not also be responsible for evaluating the dangers, hence other mechanisms must be employed. In addition, since the effects of concern are likely to be global in their impact, the interests of those outside the U.S. should be represented in some way. As a result of the Westford experience, in which the United States sought non-U.S. evaluation of the calculations of expected effects but retained final rights of decision, the United States subsequently agreed to use a COSPAR committee (Consultative Group on Potentially Harmful Effects of Space Experiments) for advance evaluation of potentially harmful experiments, though still retaining final decision.[3] Except for questions of contamination of extraterrestrial bodies, this process has, however, not been used.

The danger of upper-atmosphere pollution and degradation of the ozone layer is an issue that has arisen with regard to SST's. Presumably, similar questions will be raised by the Environmental Protection Agency (EPA) in the course of preparation of impact statements necessary for the space shuttle program.

U.S. Policy Instruments

The questions in this section with regard to the places of possible policy intervention have been implicitly covered in the earlier discussion. The heavy emphasis on continued U.S. domination of space technologies and corollary reluctance to use U.N. machinery in more than a rule-setting and forum role, has resulted in relative emphasis on policy intervention at points 1 and 2 (on pages 178–9). Of course, as noted, the technologies also require collaboration with other countries and have resulted in some new international organizations, so that point 3 is also involved in the form of bilateral agreements with other nations, some U.N. role, and new bodies such as Intelsat and Aerosat.

The U.N. and its Specialized Agencies are involved in some way in all systems, though with substantial roles in connection with operation only for meteorological satellites. Intelsat for communications satellites, and Aerosat for navigation satellites are other international organizations, all

[3] *International Cooperation and Organization for Outer Space:* Staff Report prepared for the Committee on Aerospace and Space Sciences, U.S. Senate (Washington, USGPO, 1965).

necessarily requiring policy intervention at point 3. Similarly, the role, particularly of the U.N. Outer Space Committee, in debating principles of outer space activities and developing conventions governing state behavior require intervention at that point.

To a limited extent, space satellite applications can lead to intervention in the space equivalent of point 4—where signals reach other countries. Ground installations in other countries, to make space systems meaningful, must be designed to be compatible with the system and to produce the required interface with ground equipment. The equipment for analysis as well as the ground receiver in the earth resources system can be thought of as the same kind of "border" arrangement or agreement. Necessarily in such cases the U.S. policy process must be capable of intervention at point 4.

Another kind of intervention is relevant: U.S. attempts to influence policies of other countries on space-related issues at international forums, for example, in deliberations on space rules in the U.N. Peaceful Uses of Outer Space Committee. It is not clear where that falls on the spectrum, presumably someplace between 4 and 5.

The policy process for these intervention points, particularly 1 and 2, are adequate to carry out policies calling for such intervention (whether or not they are the most appropriate policies). Similarly, the policy process for point 4 when in the context of bilateral agreements appears to be adequate to achieve the desired technical results. The more political goals inherent in influencing positions of other countries are less easy to reduce to generalizations.

Where the process is the weakest is with regard to point 3. Present organizational arrangements for policy encourage intervention at points 1 and 2, depreciating the value or wisdom of point 3 except when necessary for system operation.

This is not simply a matter of organization. Organizational changes within the U.S. would make a difference but would not change the underlying forces, at least would not have done so in the past. The drive for U.S. space leadership, coupled with substantial skepticism about the ability of the U.N. to perform efficiently anything beyond a service function, were powerful deterrents to any moves toward placing additional responsibilities in a U.N. framework.

Whatever the strength of the underlying forces, the real organization for space policy in the U.S. Government has never given adequate weight to the long-term interest of the U.S. in the international community. The decisions might have been the same, but the right questions were only rarely asked.

International Organizations

Of the space systems under examination here, all have one aspect or another within the province of international organizations. The U.N. family is involved to some extent in all, though only for meteorological satellites does it have a role that goes beyond a service function and very general norm creation. In that case, the WMO has responsibility, in conjunction with ICSU, of planning the World Weather Watch, a coordinated series of meteorological satellites and data management facilities. Expenditures would be borne by the nations participating, but the system would be planned and some aspects operated by the WMO.

In some other space technologies, an international organization is required, but a route outside the U.N. was chosen. Intelsat for communications satellites is the most prominent example; Aerosat, being created collaboratively between the U.S. and Western Europe for a navigation satellite system for the North Atlantic is another coming along. In both cases, substantial operating functions will be required of the organizations, which is one of the reasons a non-U.N. route was chosen. Military satellite systems for reconnaissance and mapping have naturally avoided any international organization tie.

The U.N. role as a forum for negotiation of basic principles of outer space behavior (legal aspects, exploration of the moon, direct broadcasting principles) in the General Assembly Peaceful Uses of Outer Space Committee is one that affects all aspects of U.S. space interests. In the absence of any single organization responsible for space activities in general, nations have focussed their concern about behavior and goals in that forum. It is strictly a negotiating and information forum, however, with no operating, allocation, or other functions. The rules it promulgates tend to be basic principles rather than detailed regulations.

The major issue before this U.N. committee and for the United States in the near future will be governing rules and organizational proposals for earth resources satellite systems, in particular, the issues of rights of remote sensing without permission of the sensed state from outer space, and the control of the resulting information. As noted earlier, the system could be fully activated, as in its present experimental form, through bilateral agreements between the U.S. and other nations. Undoubtedly the operating agency most concerned, NASA, would find this the easiest and most expeditious route for realizing an operating system. It would also leave the system essentially under U.S. domination and with the United States perceived to be able to reap at least as much advantage as, and

undoubtedly much more than, the other countries participating.

There are substantial costs to this solution, however: (1) it reinforces the idea that the U.S. intends to use its technological lead only to maximize *its* economic advantage and raises the spectre of continued economic exploitation; (2) nations using the technology have little sense that they have effective political participation in the system, an increasingly perceived need on the part of have-not nations; (3) it sacrifices an opportunity to use technology as a tool for building international responsibility; (4) possible economic benefits of scale are unlikely to be realized; (5) in time it will encourage the emergence of competing systems; and (6) it may not be a viable solution given the apparently growing skepticism about U.S. motives (that is, the U.S. may simply be outvoted, raising the question of whether or not to "go it alone" which is only partially possible on technological grounds).

What kind of international organizational entity might alternately be appropriate is not at all clear, however. International ownership and operation of the space segment implies a traditional international organization with a hierarchical, bureaucratic structure which has become so demonstrably unwieldy. An alternative would be an organization or organizations responsible only for ground stations and data management, perhaps on a regional basis. That has the great advantage of establishing organizations more likely to be technically effective while adequately giving a voice to all its members. It could also deal with the sensitive issues of ownership and controlled release of data. And it would leave the United States free to manage the space segment under internationally agreed rules of behavior.

Whether or not this is the appropriate route for an international organization, the United States will have great difficulty in reaching its own policy conclusions and presenting them effectively and persuasively in an international forum. In part, this is the legacy of previous U.S. stances on space issues, and the legacy of general resentment against the United States in the U.N. on many other issues. It is also an outgrowth, however, of the internal U.S. policy process that gives leadership, in effect, to the technical agencies interested in exploiting the technology. The initiative rarely lies in the Department of State. Moreover, issues of this kind only rarely can command the attention of senior policy-makers or policy-planners so that long-range considerations are normally buried by comparison with current interests.

Meteorological satellites, in which the U.N. has been actively involved for many years, deserve mention in this context. The WMO is one of the more effective of the Specialized Agencies in its operations, and its management of the World Weather Watch has been going well. This is partly due to the determinedly technical focus of the organization, its reliance on experts from member nations, and its good ties to technical agencies in member governments. An important question is how successful the WMO will be in maintaining this quality when its space activities become more economically and politically important to participating countries. Will those countries be willing to let countries with greater technical capacities dominate the decisions? Will they refrain from insisting on a large bureaucracy in which they can be represented? Will they be willing to mute extraneous political issues? Parallel situations in other areas give little room for optimism.

Congress is only peripherally involved in any of these international organization issues. There is little evidence that there is any consciousness in that body of their long-run significance. Earlier Congressional involvement in the issues could certainly help to highlight important questions. However, greater Congressional exposure to the operation of current international organizations is only likely to bias the case further against them in U.S. policy planning.

U.S. delegations to the relevant international organizations in this subject area cannot be explored in detail. In general, the permanent delegates to the Specialized Agencies tend to represent U.S. operating agencies, but under State Department auspices. This is not unreasonable from a technical point of view since it maximizes the technical U.S. input to those organizations. However, it also serves to play down the broader interests the U.S. may have. The occasional practice of using permanent delegate assignments as a dumping ground for employees does not enhance the effectiveness of U.S. representation.

Transnational behavior in the issues areas associated with space applications tends to be substantial since space technology is a tool for other pre-existing interests. Usually these interests, such as weather bureaus, airlines, mineral industries, communications carriers, scientists, and others, have extensive international relationships outside governments. These transnational contacts can be very helpful in supporting implementation of space technologies, but usually obstructive in implementing broader objectives that may appear detrimental to the technological application in the short run.

As far as leadership is concerned, the U.S. position in space technology has made it the leader in international organizations concerned with those technologies. However, in the Outer Space Committee its leadership is being eroded in parallel to other UN developments. It still must be the de facto leader, simply because of its dominance in the field,

but is likely to be outvoted now in unprecedented ways.

As a general note, it should be added that the U.S. in the U.N. on space matters has been less willing to take a leadership position than it once was. Other countries are bolder, but the United States is less innovative and confident.

Implications for the Functions and Organization of the Government

Comments and implications for organization of the U.S. Government for the conduct of foreign policy in this issue area have appeared throughout this essay. Summary comments only will be offered here, with some illustrations or specifics.

1. The key agencies are NASA, DOD, State, the NSC, and on some issues, the CIA, with roles in specific cases for other agencies interested in the use or implications of the technologies: National Oceanographic and Atmospheric Agency (NOAA), National Science Foundation, and the Departments of Commerce, Agriculture, and Interior. Within State, the key bureaus are those of Oceans and International Environmental and Scientific Affairs (OES) (formerly three separate offices, with International Scientific Affairs (SCI) the most relevant), International Organization Affairs (IO), and at various times the geographical bureaus, and Policy Planning Staff. The Office of Science and Technology (OST), in the Executive Office of the President, played a substantial role in the 1960's but no longer exists. The NSC has had a substantial role throughout in the space program and particularly in military-related areas, as has the Bureau of Political/Military Affairs in State for those issues. In addition, an advisory committee to the Secretary of State for Science and Foreign Affairs had a two-year life from 1973–75 to provide improved access to expertise for the Department and, in particular, for SCI on issues just such as those discussed here.

2. Current organizational arrangements on paper are reasonable, but not in practice. A major problem is the great difficulty State has in effectively taking a leading role in the formulation of policy in these issue areas. As noted earlier, the technical operating agencies have many inherent advantages in the policy process, for technical issues, while State seems even to squander what advantages it might have. In the case of NASA, an efficient bureaucracy is made even more effective in the foreign policy process by having astonishing continuity (15 years) in the individual (Arnold Frutkin) heading its international office. A competent and effective administrator, the network of ties and contacts he has established abroad far exceeding State's: for example, the European space organizations, ESRO and ELDO, maintain a U.S. liaison in NASA, not in State), as well as his cognizance of the program and of its desired objectives, help to give NASA a preeminent role in policy formulation. NASA is even the dominant voice in U.S. policy for the U.N. Peaceful Uses of Outer Space Committee, heading the delegation and taking the initiative in policy planning.

The Department of Defense has all the traditional advantages of that Department: great resources, strong ties on the Hill, a multitude of officials, independent political power, good international relations on its own, and others. State has never been very effective against DOD on detailed issues. NASA and DOD have tangled on foreign policy questions, however, though they collaborate closely on hardware development. One source of contention has been the export of technology issue, which NASA wishes to advance for its own objectives of achieving economic returns, while the DOD tends to attempt to constrain on security grounds. This is a running and repeated battle, with no consistent winner.

On another recent issue DOD proposed, under the stimulus of OMB, that the civilian meteorological satellite program could be used to serve DOD needs as well. State and NOAA (the agency most involved in that program) objected, on the grounds that it would compromise the peaceful, international program under WMO auspices. The objection was successful in the policy debate.

Within State there are, of course, many problems. One is the lack of substantial technical competence. The many reasons for this are covered in a companion essay. Another is the low esteem of the IO Bureau which means low quality of personnel and little influence within the bureaucracy. IO also is excessively burdened with routine international facilitating chores without compensating responsibilities. Thus, it rarely participates effectively in setting policy, but rather sees its role as monitoring broad policy guidelines, or enforcing particular political objectives (such as non-recognition of China) in U.S. policy toward all international organizations.

Coordination within State also seems to be a serious problem. Elaborate means are sought to be sure all offices likely to be concerned with a particular issue have a chance to be heard. The motive is laudable; the result in practice is an extremely slow and cumbersome process.

In the current State Department, a presumably special problem has arisen in that the Secretary, and his immediate staff, have largely separated themselves from the bureaucracy. The result is that issues requiring action by the Secretary are long-delayed, and leadership can be shown by State only

when the Secretary is personally interested. Morale at the working level is also a serious problem as a result.

3. Criticism is easy; alternative arrangements harder to specify. One of the most crucial questions is whether State can ever hope to command the technical resources and give the necessary political backing to them to be able to meet the technical agencies on equal terms, or at least to allow development of policy options independently of the technology agencies. Sixteen years of effort to develop the science office in State have made some progress but far less than required. It also must be said that no Secretary has really made the commitment. It would take such a commitment, the active use of outside consultants, advisory committees and the NAS; unusual political/scientific competence of the OES Assistant Secretary; and an expanded staff. It might also require the upgrading of the senior science post to Under Secretary and the reestablishment of a White House science office. Even then the result would still be less than ideal, but far superior to the present situation.

The IO Bureau also must somehow be transmuted. Talk alone, or directives, will not do it. It needs greater political visibility in order to dramatize the importance of international organizations, to attract higher competence to it from within and outside State, to carry more weight within Government and in international contacts, and to force Congressional and public attention. All of these could be achieved by the creation of a quasi-independent agency, as ACDA, for international organization affairs. The formal responsibilities would not change, nor the need for policy integration with other parts of State. But the political interest would be quite different, the quality of the personnel that could be attracted to it much higher and the effects on the policy process could be striking.

Of course, it could be argued that it is fruitless to talk of serious changes in the Department of State. Rather, the approach could be to make operating agencies more "responsible" with regard to adequate recognition of broad U.S. foreign policy objectives as they carry out their activities more or less unhampered by State. There is nothing wrong with that approach at the detailed level; in effect it is the present pattern which in operational terms works quite well. And it should certainly be extended and supported as much as is feasible.

The problem is that at the level of representing broader objectives, and relating detailed programs to those objectives, the technical agencies cannot be relied upon. They are not likely to have the perspective or background necessary, and are likely to be too heavily swayed by their own agency objectives. In addition, it is always desirable to have multiple policy voices among which to choose; State is the only agency at the departmental level that can, in principle, adequately give voice to foreign policy goals. If its voice is muted, there would be even less confidence that general foreign policy interests are guiding agency programs.

A greater White House presence in these issues, not only from a security perspective, could also serve to mute the dominance of the technological agencies. This would be one more argument for the re-creation of a science office in the Executive Office of the President.

4. The background and training of relevant officials is crucial in only two respects: quality obviously, but also the need, especially in State, of individuals able to combine technical with political factors in issues under consideration. State must have more of that competence if it is to exercise any leadership role on technical-political issues. And that competence must be widely distributed, not concentrated only in OES.

The training programs within State are probably also relevant in that they now appear to emphasize geopolitical rather than functional issues. This follows the prevailing reward system that rates service in political posts in geographical bureaus as the route to advancement, with functional bureaus becoming dead ends.

5. The key problem of geographical and functional organization is that mentioned above: the relative dominance of the geographical bureaus in the policy process, attracting the best personnel, and influencing policy options in a variety of subtle ways.

There are also obvious problems from this organization pattern of coordination, of excessive attention to the detailed political issues within nations as against those issues cutting across nations, and of breeding an excessive concern for the short-term issues and effects. But no organization scheme could adequately meet all policy needs, and it is not clear what problems an alternative structure would itself create. Certainly, more interest in these technology-related issues at higher levels, because they are and will become central issues, is not dependent on structural reforms.

6. Coordination across agencies tends to be better when the competence, command of the subject, and political standing of important participants is equivalent. Then no interested party can be ignored, or at least not for long.

But coordination is a negative concept. It usually implies a dead hand of veto rather than of leadership. Though the costs of inadequate coordination can be substantial, the costs of a fetish for coordination are greater.

7. Long-range planning is not handled well at all in State; the technical agencies do a better job since it is easier to do for technological subjects,

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and they can command more resources for the task. Short-range drives always win out over the long. However, more effective use of outside studies and consultants, with careful attention to techniques for transmitting results to policymakers is a practice little tried at the State Department. The use of outside consultants can also serve to raise the level at which issues are considered, which in turn changes the relative influence pattern in policy formulation.

8. As noted, Congressmen are not tied to policy in a way that would educate them to the long-range, international issues involved in space satellite technologies. The Senate Space Sciences Committee and the House Science and Technology Committee, as well as the two foreign affairs committees are the most relevant bodies, but their interest in these issues has been marginal at best. As a result, very few in Congress have a feeling for how U.S. interests will be affected in the long run by the foreign policy decisions made today about space technology systems. It should not be hard through hearings, informal briefings, and inclusion on delegations to bring these issues to the attention of members of Congress, though their response and its significance is not clear. The fact that the impact of space technologies cuts across Congressional Committee interests also militates against effective relationships. NASA has, of course, been affected in its policy positions somewhat by the political interests of the Congressmen with the greatest power over its program. But the role has been minor compared to, for example, the past role of the Joint Committee for Atomic Energy over the AEC.

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U.S. Government Organization for Science, Technology, and Foreign Policy

Victor Basiuk
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INTRODUCTION

This paper will examine the present organization of the U.S. Government for international science and technology policy. It focuses on the Office of the Science Advisor to the President and the Department of State and includes consideration of their relationship with the operating technical agencies. It will also discuss options for organizational change which might eliminate current weaknesses.

A conceptual tool used throughout this paper is the distinction between the "rational" and the "constituency" approaches to decision-making. The rational approach involves the consideration of all the relevant factors on a given issue—including the interest of the various groups bearing on the subject—and a decision based on what is in the best interest of the nation as a whole. The constituency approach is basically a political one in which decisions are made as a result of the competition among the various constituencies and interests. While in their "pure" forms the rational and the constituency decision-making can be envisioned as the opposite poles of a spectrum, in actual practice decisions are made somewhere between the two poles by combining both rational and constituency elements.[1] The question is: Where to strike a balance between the two in a particular period of history? This question is especially important in science and technology policy which deals with resources and programs around which interests and constituencies tend to build.*

MACHINERY AT THE TOP: SCIENCE ADVISOR TO THE PRESIDENT AND HIS STAFF

Reorganization Plan No. 1 of 1973, issued in January of that year, abolished the Office of Science and Technology (OST) and the President's Science Advisory Committee (PSAC) and removed the Science Advisor to the President from the White House. The immediate impetus for this action was President Nixon's personal dissatisfaction with his science and technology advisory machinery in general and with its members' political activity in particular. A more fundamental reason was its limited effectiveness and—a related phenomenon—its relationship to the academic scientific community as a constituency.[2]

[1]I am indebted to Harvey Brooks of Harvard University for the concept of a spectrum. The rational and the constituency approaches are discussed at greater length in my forthcoming book on *Technology, the Future, and American Policy*, to be published by the Free Press.

*This is an abridged version of a detailed report to the Commission on the Organization of the Government for the Conduct of Foreign Policy. Sources of the report included extensive interviews of U.S. government officials as well as published material, governmental documents, and other information supplied on request by various Departments and offices.

[2]Although, in terms of the image, the identification of the science advisory mechanism in the White House with the scientific community was strong, in reality it was probably less than the image. The last Science Advisor in the White House was an engineer by education, but his occupational experience was principally in research. Nevertheless, the values and the outlook of the scientific community—as distinguished from the engineering community or social scientists—were still fairly strongly entrenched in his Office and in OST, thus handicapping the science advisory machinery in anticipating the more complex forms of technological impact involving chain reactions of social phenomena and in coping with it. Thus, it was a Department of Commerce economist, Michael Boretsky, who, in June 1969, advanced the thesis that the United States is slipping in technology-intensive products and productivity which will result in an unfavorable balance of trade (which actually occurred in 1971). OST was slow in appreciating the importance of this development and acting upon it. As a result, the President ap-

The principal characteristics of the new science and technology advisory apparatus—as distinguished from the old—are as follows:

1. The function of the Science Advisor to the President has been given to the Director of the National Science Foundation (NSF), thus making him wear two hats. The civilian functions of OST have also been transferred to NSF.

2. Although the title "Science Advisor to the President" has been preserved, in actual practice the Science Advisor has very little to do with the President. He interacts largely with the Executive Office and the U.S. Government in general.

3. Military science and technology is no longer within the sphere of jurisdiction of the Science Advisor; it has become the function of the National Security Council. The Science Advisor, however, is involved in some peripheral areas of military science and technology, mainly through the Federal Council on Science and Technology (FCST).

The principal effect of the reorganization was double:

(a) It reduced the "clout" of the Science Advisor and his staff, especially with regard to the operating technical agencies such as NASA, AEC, and, in particular, the military sector. In a power-conscious Washington, power is usually measured by proximity to the President, participation in key decision-making bodies, or the size of the budget one controls. The new Science Advisor suffers on all of these counts. The importance of "clout" lies in the fact that rationalizing the nation's science and technology policy can be seriously impeded if appropriate cooperation on the part of the operating technical agencies is not available to the Science Advisor.

(b) It placed the responsibility for science and technology advice into an agency which more than any other reflects the values and attitudes of academic science. They are not very suitable for an effective science and technology policy, national or international.[3] NSF is changing, but the values and attitudes of traditional science are still influential within the Agency and its top leadership.

The Science Advisor: Modus Operandi

The *modus operandi* of the new scientific advisory machinery differs significantly from the old. The old Science Advisor and OST attempted to think in terms of the Presidency and its requirements, and tried to develop policies and introduce a degree of coordination into programs from above. They had limited power and effectiveness, but with regard to the various components of the scientific and technical community, the "constituencies", they embodied the "rational" approach to decision-making.[4]

The present science advisory apparatus has adopted a more pragmatic, *ad hoc* approach to science and technology policy-making as a pluralistic process involving interplay among multiple constituencies. It does not attempt to steer this process but tries to improve its individual elements here and there. Unlike the old Science Advisor and the OST which looked at the process from above, the new apparatus has injected itself into it, largely laterally. This is not limited to the Executive Office

pointed, in September 1971, William M. Magruder, an energetic engineer, as a Special Consultant to the President to mobilize technology in support of the economy. For a variety of reasons, Magruder's New Technological Opportunities (NTO) program failed to win the massive financial backing it required, but the case nevertheless illustrates the limitations of OST. For an account of the Magruder effort, see Claude E. Barfield, "Science Report: White House Views Intense Technology Hunt as Useful Exercise, Though Few Projects Emerge," *National Journal Reports*, Vol. 4 (May 6, 1972), pp. 756–765.

[3]Values and attitudes of scientists will be briefly summarized here. By and large, scientists tend to be internationalistic: science is international and serves mankind. They believe in the promotion of science and technology as a worthwhile objective in its own right (there are some exceptions to this, like nuclear weapons). Scientists resent consideration of priorities in science and technology based on social needs: science should be supported across the board, and priorities are damaging to the morale of the scientific community and to the peer system which pervades it. For scientists, "international science and technology policy" means entering into an agreement with a foreign nation or an international organization to exchange scientific information or scientists, or, at most, the establishment of a cooperative scientific program. It does not usually encompass the development of an appropriate scientific and technological capability and the projection of it or its impact abroad—perhaps on a global scale—to achieve economic, social, ecological, or political objectives. See Don K. Price, *The Scientific Estate* (Cambridge, Mass: Harvard University Press, 1965), p. 83; Eugene B. Skolnikoff, *Science, Technology and American Foreign Policy* (Cambridge: The MIT Press, 1967), p. 244, and Warner R. Schilling, "Scientists, Foreign Policy, and Politics," in Robert Gilpin and Christopher Wright (eds.) *Scientists and National Policy-Making* (New York: Columbia University Press, 1964), pp. 158–163.

It should be emphasized that there are probably very few individuals in the U.S. Government who represent "pure" examples of scientists (or of any other group—engineers, businessmen, etc.). Through interaction with other government officers, scientists lose, in varied degrees, the attributes of their particular group. Some of them lose these attributes to a large extent and can be very successful in integrating scientific, technological, and political considerations and factors into a package of policy characterized by thrust and effectiveness. Others, however, lose them only to a limited degree.

[4]This has to be qualified by two considerations: (a) In the totality of the national decision-making process, the old White House science advisory machinery was itself tinted by a constituency bias, in the sense that it was viewed as representing—and advocating—the interests of science; (b) There was internal division within the scientific and technical community which was reflected in a somewhat biased attitude of academic scientists against the defense, scientific, and technological sector. In this regard, the old White House machinery was not completely impartial with regard to the scientific and technological community itself, though it must be pointed out that this was more pronounced in the case of PSAC than the Science Advisor and OST.

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level, but extends to a large degree to agencies and their components.

In this approach, priorities are determined and exploited primarily by opportunity rather than a broader design. The nature of activity has been tailored to the reduced status and "clout." But even within the framework of existing constraints all potential leverages for influence do not seem to have been thought through and fully capitalized upon. In some cases, however, potential leverages were effectively used. For example, the Science Advisor made an early decision to focus his attention on energy and established, in August 1973, an Office of Energy R&D Policy (OEP) to serve as his staff. His impact on the field of energy has probably been greater than anywhere else.

Another leverage of influence of the Science Advisor is the Federal Council for Science and Technology (FCST) which he chairs and whose activity he has invigorated. Consisting of the heads of the technical agencies and Assistant Secretaries for Science and Technology or their equivalent in the various executive Departments (including DOD), the FCST is the single most important avenue of contact for the Science Advisor with the entire governmental scientific and technological community. As an interagency committee, the FCST has traditionally suffered from many of the negative features of the constituency decision-making process and is not a strong body. However, considering the philosophy and the mode of operation of the Science Advisor—"multiplicity of inputs on multiplicity of levels"—the FCST provides a useful source of information, a forum for coordination of scientific and technological activities largely in secondary areas and, to a degree, an instrumentality helpful in avoiding major duplications of effort.[5]

The science advisory apparatus reflects the values and attitudes of academic science much less than one would expect. The educational background of the incumbent Science Advisor is applied science and his career has been mostly in academic engineering and government. His staff have largely industrial-engineering-government backgrounds, and little academic science. An OMB official who used to complain about too academic an outlook of OST, remarked of the present science advisory machinery: "It tries to cover a wider span." This is not, however, to say that the values and attitudes of scientists are absent in the Office of the Science Advisor.

Although one can detect awareness in the Office of the Science Advisor that U.S. international posture is linked with U.S. strength in science and technology, there is no indication that the Science Advisor systematically reviews international programs to ensure that they also meet domestic needs, in addition to whatever international objectives they are expected to achieve. The traditional—and simplistic—view of scientists that "research and science are supernational activities by their very nature and, as such, are pervasive vehicles for achieving understanding and cooperation across national boundaries" is still shared by the Science Advisor.[6] The Office of the Science Advisor defers to the Department of State in the formulation of international science policy and agreements, although a number of agreements thus concluded are purely cosmetic.

We shall take a look more specifically at the three staff offices which directly serve the Science Advisor: Science and Technology Policy Office (STPO), Office of Energy R&D Policy (OEP), and Office of National R&D Assessment (NRDA).

Science and Technology Policy Office (STPO)

STPO is the principal staff office supporting the Director of NSF in his capacity as Science Advisor to the President and the span of its responsibilities is broader than that of any other office serving the Science Advisor.[7] It consists of 15 professionals, each of whom is assigned a particular area of responsibility, such as international science and technology; material science; space; aeronautics and basic science; the social sciences; agriculture and world food problem; industrial R&D, etc.

Appraisal of STPO within the NSF and from outside of the Agency was mixed. Outsiders thought that the quality of personnel was uneven; some peo-

[5]For a description of the function of the FCST, its membership, and its committees, see "Federal Council on Science and Technology," a paper prepared by Science and Technology Policy Office, December 1974.

[6]The above quotation comes from a letter of Dr. H. Guyford Stever to Mr. Robert D. Murphy, Chairman, Commission on the Organization of the Government for the Conduct of Foreign Policy, dated April 5, 1974. In this instance, Dr. Stever wrote as Director of NSF, but since the present analysis deals with the outlook and perceptions of the Science Advisor who is at the same time Director of NSF, the distinction between the two functions is immaterial here.

If one accepts this view of the role of science in foreign affairs, then practically any international scientific program is "good" by definition, and priorities have limited relevance. The simplistic nature of this view is coming to be increasingly questioned in scientific circles. One official of NAS involved in international activities sniffed at this view: "Sports is probably even more international. Why, instead, don't we play more football with foreigners to promote international understanding?"

[7]For the responsibilities of STPO, see Staff Memorandum by H. Guyford Stever, Director, NSF, dated June 30, 1973. Subject: Establishment of the Science and Technology Policy Office (STPO).

ple were very capable and experienced, while others were relative novices. The Staff Director noted that there is a problem of bringing people "up to speed" in their respective fields. Questions were raised as to how effectively the effort was orchestrated within the Office.

Interviews and other contacts with personnel in STPO tended to confirm the views of the outsiders. Individual staff members operate primarily on their own within their designated areas. They are action-oriented, but do not seem to do solid analysis prior to the involvement. However, in some individual cases (especially those with a solid background in policy formulation, like OST), a more fundamental approach is detectable. STPO does not seem to function as a team, although several individuals or even the entire Office may be pooled together on a particular *ad hoc* project. Intellectual leadership, to the extent it is sought, is sought from people within one's field, usually outside of STPO.

STPO maintains a program of outside grants to support its activity. Its funding for FY 1974 was a little over $1 million and for FY 1975 it amounts to $1.5 million. The specific studies to be undertaken are suggested to the Staff Director by the individual staff members in their areas of activity. According to the FY 1975 program announcement, the thrust of the program is twofold: (1) studies of the process of science policy formulation and the methodologies which contribute to this process, and (2) specific analyses of problem areas, data gathering, and development of forecasts and analyses of the consequences of potential policy options.[8] Some studies currently in progress are long-range and the potential of several studies appears to be promising.[9]

STPO is relatively weak in the foreign policy aspect of its activity. Prior to the appointment of a former State Department official as the Executive Secretary of the FCST in February 1975, STPO has had only one staff member who was specifically designated for international science and technology policy, and he has been sharing this function with responsibility for DOD and NSC liaison. The occupants of this position came from technical backgrounds, with limited exposure to foreign policy, and their activity was largely reactive. Other staff members dealing with specialized areas (e.g., ocean sciences, the food problem, the environment) found themselves eventually involved in international activities. In some cases, this branching out into the area of foreign policy was quite effective; in others the staff members concerned were barely aware of international implications of their activity.

Office of Energy R&D Policy (OEP)

The function of OEP is "to provide, through the NSF Director in his role as Science Advisor, an independent source of advice and analysis of energy R&D and other energy related programs, for use by the Executive Office of the President and other federal agencies." It is a somewhat smaller office than STPO (11 vs. 15 professionals) but its budget for outside research is more than twice as large as that of STPO ($4 million vs. $1.5 million, FY 1975). The staff itself is also to a large extent involved in assessment and analytical studies. However, OEP personnel do not consider themselves as primarily "analysts." They think that they are probably more policy-oriented than other staff offices of the Science Advisor, but they believe that policy moves ought to be based on solid analysis first.

The Director of OEP feels that his Office is not handicapped by virtue of being in NSF and emphasized that the quality of the advice and the "right kind" of working relationship is what produces effectiveness, and he believes that OEP is effective. Apparently, in addition to the capability of the staff and its leadership, there are three other elements which facilitate this effectiveness:

(a) A close relationship with OMB. OEP spends about a third of its time working with or for OMB. Since the results of the analysis and advice provided to OMB are anonymous and OMB has "clout," OEP ensures effectiveness of its work without antagonizing technical agencies and meeting their potential opposition.

(b) Availability of funds for energy R&D. Money is flowing rather generously into this field, at a rate well above the initially projected $10 billion for the first five years of Project Independence. Money thus serves as a lubricant in the relationship between OEP and the operating technical agencies—they need good advice on how to use the funds flowing in. If the funding were contracting rather than expanding, then vested interests of existing programs would not necessarily welcome objective and competent advice.

(c) The leadership of OEP shares, to a considerable degree, the traditional view of scientists to the effect that competent R&D ought to be supported and, insofar as competence exists, minor variations in programs and approaches are not really a duplication of effort, but a healthy diversity which "expands the net" and increases the chances of successful results. Accordingly, priorities are not

[8]See Science and Technology Policy Office, "Fiscal Year 1975 Budget to the Congress," p. C-X-2.

[9]See *ibid.* and "STPO Grants, Contracts, and Purchase Orders for Fiscal Year 1974."

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rigorously enforced. If capable scientists are available and they propose a somewhat different approach, they will usually get funded. The philosophy of OEP thus helps the Office to get along well with the operating technical agencies.

OEP's involvement in international activities has been very limited and largely *ad hoc*. There is one staff member who deals with international aspects of R&D, a function which consumes about 20–25 percent of his time.

Office of National R&D Assessment (NRDA)

NRDA was established within NSF in August 1972 (before the Reorganization Plan No. 1 of 1973) to serve the President's Science Advisor, the Executive Office of the President, the Congress, and other Federal agencies. It spends a lesser percentage of its time in support of the President's Science Advisor than do STPO and OEP. The mission of NRDA is to enhance the contribution of science and technology to the nation through the analysis of: (a) relationships between government policy options and technological innovation (including R&D); (b) socioeconomic effect of technological innovation; and (c) processes of technological innovation.

Unlike the other two offices serving the Science Advisor, NRDA is strong in social and behavioral sciences. The caliber of personnel (16 professionals) appears to be high; of the three staff offices of the Science Advisor, this Office is probably most like a university research institute which takes pride in scholarship and objectivity of its research. NRDA places emphasis on publication of its studies and encourages individual publications of its members. It has an annual budget of $2.5 million (FY 1975) for extramural studies.

A weak point of NRDA appears to be the translation of its studies into concrete policy inputs and their implementation. The focus of the first two years of NRDA's activity has been on extramural studies which are not directly applicable to governmental policy. It appears that the staff function of translating these studies into policy options is being currently increased and greater emphasis is being placed on staff interface with operational and policy personnel.

A relatively small part of the NRDA effort is devoted to international affairs and it has no international relations specialist on board. Three staff members, however, have part-time responsibility in international technology transfer.[10]

[10]For details on NRDA, see NSF, Office of National R&D Assessment, "Official Program Plan for Support of Extramural Research—Fiscal Year 1975" (September 1974) and "Second Annual Report—Fiscal Year 1974" (September 1974).

Concluding Remarks

The science and technology advisory machinery in NSF discarded the Olympian attitude of the old OST and adopted a more flexible approach of injecting itself into the governmental process. In some respects, this was an improvement; it opened up the opportunity to get direct access to influential personnel in the operating agencies, to persuade them, and to bring about desirable change from the inside. In doing so, however, the Science Advisor and his staff lost a clear perception of their role as representing the President and embodying the interest of the nation as a whole.

Above all, this role requires a clear identification of priorities and of the leverages necessary to bring about desirable change in accordance with those priorities. Excellent scientific and technical advice leading to the strengthening of a constituency—be it a technical government agency or a group with an interest of its own—serves the national interest only if the interest of this constituency coincides with the national interest and to the same degree. This is far from always the case, and helping most everybody in the government with good science and technology advice can run counter to the interest of the nation. In short, what is critical in the "right" kind of the national science and technology advisory apparatus is not only and not so much its technical expertise (as commonly thought), but *a clear perception of its role in the governmental process, its understanding of that process and effectiveness in improving it.*

In addition to a clear perception of the role of the Science Advisor, organization of his staff and its caliber are highly important. The three offices of the Science Advisor are potentially complementary, but this complementarity is not being capitalized upon. STPO is the most action-oriented, but it lacks an intellectual foundation and effective management. OEP probably provides the best balance between analytical capability and policy impact.[11] NRDA is fairly strong intellectually, but its link with the policy-making machinery is short of optimum. All the three offices are weak in the foreign policy aspect of their activity.

MILITARY SCIENCE AND TECHNOLOGY: A SEPARATE WAY

As a result of Reorganization Plan No. 1 of 1973, military science and technology was detached from

[11]It must be pointed out, however, that the task of OEP is not as complex as that of the other two offices. The mission and scope of STPO are especially broad and its management is more difficult than that of the other offices.

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the jurisdiction of the Science Advisor to the President and placed under the National Security Council (NSC). To a degree, the NSC machinery is involved in military science and technology, but it would be a gross exaggeration to say that it effectively reviews this sector, let alone runs it.

The single most important organization on the NSC level dealing with military science and technology is the NSC Military Technical Consultant Mechanism (MTCM) which consists of a group (about 30) of outside consultants serving as a pool of talent from which *ad hoc* panels of varied size are created to examine particular technologies, systems, or programs. This mechanism operates under the Senior Staff Member for Science and Technology (both military and non-military). The latter has only one staff member who functions as the Executive Secretary of the National Security Council MTCM. MTCM functions similarly to the defunct PSAC, except that it is more an in-house organization and is limited to military technology only.

Each topic for examination by a panel of MTCM is approved by the Assistant to the President for National Security Affairs. He also requests some studies—more of the nature of a problem than a particular military system—but not many. Other sources for the topics to be studied include the Director of the NSC Program Analysis Office, the members of MTCM, and its Executive Secretary.

Principal users of the studies on the NSC level include the Special Assistant to the President for National Security Affairs, and the NSC Program Analysis Office.[12] The Defense Program Review Committee (DPRC)[13] is another user of studies by MTCM, but DPRC does not regularly review these studies, largely because it is a policy-oriented—and not technically-oriented—body. The studies are not employed by NSC to significantly change priorities or as an instrumentality to help enforce a particular decision against the DOD. Rather, they serve as merely one element in the general consensus-forming process between the NSC and the DOD.

The Assistant to the President for National Security Affairs, as a matter of established procedure, forwards MTCM studies to the Secretary of Defense. Since they pass through the Secretary of Defense, the studies are taken with a degree of seriousness in OSD. However, these studies have never changed priorities in DOD. One reason is that many of the same consultants who work for DOD sit on the MTCM panels—thus, there is a certain duplication of advice. The Director of Defense Research and Engineering (DDR&E) said that they are "useful"; there is some duplication with his studies, but not much. If MTCM undertakes a study, he sees to it that the Defense Science Board does not undertake a similar study. Thus, to a degree, MTCM studies alleviate the burden of work of DDR&E.

The present separation between the civil and the military technology sectors presents two issues: (a) a proper balance between the two, and (b) appropriate checks and rationality in the selection of priorities within the military sector.

(a) The Senior Staff Member for Science and Technology at NSC covers both military and civil technology, but he does not actually balance them. He largely deals with *ad hoc* programs which involve both military and civil considerations (e.g., programs associated with the Global Navigation Satellite System in which both the airlines and the military are interested). The balance between the two sectors is not achieved rationally at any particular point, but is a product of the tug-and-pull of the various interests vying for resources throughout the U.S. Government and the pluralistic decision-making process (also heavily policized) within the Executive Office.

(b) Under the present system, military science and technology has been delegated—more than under the previous one—to the constituency itself, the DOD. Within the DOD, a certain rationalization, apparently, has taken place. In particular, in the last couple of years power has shifted to the DDR&E and the Defense Systems Acquisition Review Council (DSARC), with the DDR&E, in effect, using DSARC as an instrumentality to strengthen his position with regard to the individual Services.[14] While some of the vested interests of the Services

[12]This Office consists of a total of eight staff members and is largely engaged in studies and review involving SALT and MBFR. It does not systematically review military R&D and certainly does not try to run it.

[13]DPRC is chaired by the Assistant to the President for National Security Affairs and includes Under Secretary of State; Deputy Secretary of Defense; Chairman, JCS; Chairman, CEA; Director, OMB; and DCI.

[14]The purpose of DSARC is to provide high-level coordinated advice to the Secretary of Defense on each major program at critical decision points (e.g., program initiation; the full-scale development decision; and production/deployment decision). The members of DSARC include the Director, DR&E; three Assistant Secretaries of Defense—Comptroller, Installation and Logistics, and Intelligence; and the Director, Telecommunications and Command and Control Systems (DTACCS). The DDR&E serves as chairman of DSARC for development decision meetings, while the ASD (I&L) serves as chairman for production decision meetings. For details, see Office of the Director of Defense Research and Engineering, *Research and Development in the Department of Defense;* A Management Overview (Washington: U.S. Government Printing Office, 1974), pp. 37–43. Aside from the chairmanship of DSARC on development questions, DDR&E exercises important influence through control of the Development Concept Papers (DCPs). A DCP is required for each new phase of the acquisition and is considered by DSARC. DDR&E sets standards and requirements with regard to the DCPs and can repeatedly turn them down, requiring that the Service submitting a DCP provide a better rationale for the proposed system.

may have been curtailed as a result, there is no certainty that the system is truly rational.[15] According to the Director of DR&E, MTCM is a useful body because it introduces a system of checks and balances and does not leave everything to DDR&E. There is no evidence that this is a strong system of checks and balances.

THE DEPARTMENT OF STATE AND SCIENCE AND TECHNOLOGY

Science and Technology: Problems of a Functional Area of State

International science and technology policy has not been doing very well in the Department of State. The reasons for this can be traced to some of the general characteristics of the Department and the values and attitudes of its personnel.

The Department of State is not an operating agency and it does not itself control and apply resources and other tangible assets as an instrument of policy.[16] This has affected State intellectually as well as operationally. State personnel have had limited exposure to, and hence limited appreciation of, the use of functional areas—i.e., those dealing with resources and other tangible assets—as an instrument of policy. Traditionally, the Department of State has had a tendency to view foreign policy as "diplomacy" rather than "national strategy," its organization and policy followed along country or regional lines, and the standard route to promotion and a successful career was through a regional bureau. When the changing nature of world politics began to place an increasing emphasis on dealing with resources and the employment of resources as an instrument of foreign policy, functional bureaus —e.g., the Bureau of Economic and Business Affairs (EB), the Politico-Military Bureau (PM)—were gradually established at State. Their acceptability varied; usually, the older the Bureau the more acceptable it becomes. The Bureau of Oceans and International Environmental and Scientific Affairs (OES; earlier SCI) is the youngest of functional bureaus and is at the bottom of the acceptability ladder. Allowing for the progress made in the acceptability of functional bureaus at State, regional bureaus and their mentality are still the most influential in the Department, and the bulk of prestige and desirable promotions is associated with them.[17]

The lack of control over resources handicaps State's effectiveness in science and technology policy in a number of ways. Conventional FSOs, when assigned to this area, do not adequately understand problems and programs involving resources and do not quite know how to handle them in a foreign policy framework. People from the scientific and technical fields brought into the Department laterally as civil servants or FSRs understand programs, but they do not usually have a strong background in foreign policy and are thus intellectually handicapped in integrating science and technology with the needs of foreign policy. Moreover, they are bureaucratically handicapped within the Department by virtue of being looked down upon as people who do not quite "belong." Thus, even when promising policy initiatives integrating science and technology with foreign policy are proposed, they are likely to meet multiple hurdles in being accepted. Quite apart from the regard in which scientific and technical people are held in the Department, promising policy initiatives involving science and technology may not be favorably received because this is much too esoteric a subject for the more traditional diplomats occupying key positions in State. There are thus built-in disincentives for State personnel with scientific and technical backgrounds and a genuine concern for fundamentals of policy to project themselves into the policy area by leaning on their technical expertise.[18]

[15]The Services concede that, as a result of the strengthened power of DDR&E, excessive overlapping between the Services has been diminished in some programs (e.g., the laser program). However, they claim that DDR&E is not sufficiently staffed to justify the degree of control it now has. They suggest that DDR&E did not understand some systems, but did not relinquish its prerogatives to control them. The Director of DR&E, however, stated in a personal interview that he is adequately staffed.

[16]This can be illustrated by a comparison of the budgets of the Departments of State and Defense. In FY 1975, the total budget of the Department of State was about $720 million. It was used predominantly for State Department personnel and its missions abroad, while that of Defense was $84.6 billion, of which $8.9 billion was for R&D alone.

[17]The case of Harry C. Blaney (FSO-4) provides an illustration. In 1972, he asked Personnel at State to be assigned to a training slot as a Fellow at the Woodrow Wilson International Center for Scholars to study the problems of the impact of science and technology on foreign affairs. He was told that this was not a high priority area for the Foreign Service and that such a training would hurt his career. He was suggested instead to take a "nice country desk job" or a "respectable foreign assignment." Blaney disregarded the advice and went to the Woodrow Wilson Center on his own, on leave-without-pay. He is presently a member of the Policy Planning Staff (S/P), working on many "hot" problems related to science and technology. (The somewhat special case of S/P is discussed in the next section.) See his article, "Global Challenges and the Fudge Factory in Foggy Bottom: Need for a New Diplomacy," *Foreign Service Journal*, Vol. 51 (September 1974), p. 13, where he gives an account of his experience with Personnel.

[18]SCI personnel complained that in the few cases where they attempted to initiate major policy proposals involving science and technology, regional bureaus would politely comment on them and return them with no apparent support for their implementation.

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The Department of State is also operationally handicapped in science and technology policy because it is the other departments and agencies which control resources and technical assets. Moreover, those departments and agencies each have a foreign service of their own. In the number of personnel involved in foreign affairs, a single technical agency approached, and at times exceeded, the total number of personnel in SCI. To be sure, the Department has strong prerogatives in foreign policy and even though it does not control resources it could, through the development of appropriate conceptual instruments integrating science and technology with foreign policy and exercising initiative and leadership, persuade the technical agencies and/or nudge them into cooperation. Instead, SCI personnel became immersed in daily activities of foreign affairs, and here small numbers were at a disadvantage. They could not stay on top of things.[19]

Policy Planning Staff (S/P)

Aside from the Office of the Secretary, S/P is the highest office in State where science and technology policy is developed or otherwise dealt with. A number of the problems in this area discussed in the preceding section apply to S/P only to a limited extent and some not at all. There are several reasons for this: a high position of this Office in the Department and the prestige of its personnel; its close relationship to the Secretary in recent months, thus making S/P reflect some new developments which will take a long time before they filter their way throughout the Department; and its general orientation, which is probably more intellectual and academic than in any other office of the Department.

These qualifications notwithstanding, one should not assume that all is well with science and technology in S/P. For years, there was only one officer at S/P who specialized in science and technology policy. However, even he has not been involved in this field on a full-time basis; about 25 percent of his time is taken up by other duties. In the past year or two, the number of professional people dealing with the area of science and technology has increased to nine (out of a total of 28). The extent of their involvement ranges from 10 to 75 percent. Three of the nine deal principally with the military aspects of science and technology policy (nuclear proliferation, SALT, etc.) Except for the officer mentioned previously and, perhaps, one FSO, S/P personnel who work in science and technology policy deal with *ad hoc* problems or specialized areas (e.g., energy, food, nuclear proliferation) and do not have a comprehensive familiarity with the field.

S/P is not engaged in long-range anticipatory activity. Some anticipation is being done, but the time horizon is from six months to three years. Similarly, S/P is not doing long-range planning. Some individual studies dealing with longer-range future have been done occasionally, but this has not been translated into systematic long-range planning. In general, S/P is immersed in immediate staff work for the Secretary. It is very much current issue-oriented and does not do systematic thinking. A Deputy Director of S/P noted that the real problem of the Policy Planning Staff is not so much a lack of early warning, but the pressure of daily concerns which is so absorbing that the staff cannot systematically address itself to a future issue unless it is very obvious and generates pressure of its own.

The Bureau of Oceans and International Environmental and Scientific Affairs (OES)

On October 14, 1974, the Bureau of International Scientific and Technological Affairs (SCI) was replaced by the Bureau of Oceans and International Environmental and Scientific Affairs (OES). The principal changes introduced by the reorganization were as follows:

1. The new Bureau is headed by an Assistant Secretary, while the old was headed by a Director. Thus, a certain upgrading of the Bureau has taken place.
2. The Office of the Special Assistant to the Secretary for Fisheries and Wildlife and Coordinator of Ocean Affairs was abolished and these functions have been transferred to OES.
3. The Office of the Special Assistant to the Secretary for Population Matters has been abolished and its function has also been transferred to OES.

As a result of the reorganization, the Bureau has been increased from about 32 to 56 professional personnel. In addition to the Assistant Secretary, it has three new positions of Deputy Assistant

[19]It would not be fair to the Department of State to lay the blame for the sad state of affairs in its science and technology policy sector at the door of the Department alone. International science and technology policy as a field is inadequately developed. A body of theory and solid conceptual analysis—something the universities would be expected to provide—are lacking. Generally accepted standards of teaching in the field are virtually non-existent. The diversity in courses on this subject is such as to border on the chaotic. Therefore, in terms of concepts, criteria to apply for selection of its personnel, and appropriately trained personnel itself, the academic world can help the Department only to a limited degree.

Secretaries for (a) Oceans and Fisheries Affairs, (b) Scientific and Technological Affairs and (c) Environmental and Population Affairs.[20]

This reorganization was not initiated by State, but by Congress. Though a political compromise,[21] it makes sense in that it brings together under one Bureau a number of related functional activities which heretofore were scattered throughout the Department. In one respect, an incongruity still exists: population matters have been brought within the Bureau, but food is still in the Office of Food Policy and Programs in the Bureau of Economic and Business Affairs (EB).

A new Assistant Secretary was appointed to OES in January 1975 and a number of constructive measures have been undertaken in the new Bureau since.[22] However, problems of the Bureau, internal and external, are complex and it is difficult to predict its future with certainty. Therefore, the discussion below will largely focus on the functioning and problems of SCI and attempt to draw some lessons from them for OES.

To a large extent, the nature of activities of SCI was strongly conditioned by considerations of its acceptability in a Department which regarded its function as largely alien to its customary pursuits and which looked down on its personnel. The Director of the Bureau addressed the problem of acceptability by trying to raise the Bureau's prestige and to enhance its utility to the established Bureaus.

The initial focus of SCI was on science rather than technology as the more prestigious of the two. The Director maintained personal contacts with the scientific community and relations with well-known scientists, especially Nobel Prize winners, were cultivated. The objective of making the Bureau useful was pursued by undertaking tasks which other bureaus would gladly unload on somebody else. This activity included taking care of visitors for the regional bureaus.

Largely thanks to the substantial bureaucratic skills of the Director, the stature of the Bureau in the Department was enhanced. This, however, was achieved at a price. The early focus of the Bureau on science made it overlook the more important developments in international affairs which were mostly in the area of technology. The broadly internationalistic outlook of scientists, not clearly oriented to particular priorities, probably affected the activities of SCI. The Bureau has become very much action-oriented with little sense of priorities —it was overwhelmingly reactive and immersed in minutiae. The Bureau seldom ventured into the policy realm with major policy proposals.[23]

SCI has not developed its own analytical and planning capability and it did little to encourage any assistance along these lines from the outside. When an opportunity arose to establish a unit in the Bureau of Intelligence and Research (INR) in support of SCI, the latter was lukewarm to the idea and no such unit was established. SCI did not seek funds for extramural studies. Only under pressure from S/P, SCI made an effort to obtain personnel to do planning in the Bureau. When the Department did not allocate such personnel and there was no more pressure from S/P, the issue was shelved. A potentially important move to strengthen the intellectual capability of the Bureau was made in April, 1973, when a Department of State Advisory Committee on Science and Foreign Affairs (ACSFA) was established. In part intended to give greater visibility to science and technology issues at State and to provide SCI with a leverage in State bureaucracy, ACSFA did not prove to be very productive.[24]

The background of SCI is strongly reflected in the attitudes of present personnel in OES. As a rule, people in OES are not analytically inclined. The vast majority of them would bring up the subject of planning only when asked. Some consider it unnecessary; some would concede—"perhaps it should be done," but then promptly relegate it to lower echelons. The attitudes, however, are different in some of the newer offices, like the Office of Population which came from a different background and where a strong devotion to looking ahead exists.

The view of OES from the outside varies, but by and large it is not very favorable. S/P was impatient with old SCI and hopes that OES will straighten itself out. Some people in the technical agencies

[20]As a part of the reorganization, the Office of the Special Assistant to the Secretary for Environmental Affairs was abolished, but since he had also been the Director of the Office of Environmental Affairs in SCI, no truly important change in this area has taken place. See Foreign Affairs Manual Circular No. 687, October 8, 1974, on the establishment of the Bureau, its functions and organization.

[21]Senator Claiborne Pell (D., R.I.) was pressing State for the establishment of a separate Bureau for oceans, while Senator Howard H. Baker, Jr. (R., Tenn.) proposed a Bureau for the environment. A compromise was reached by combining both in OES and attaching the reorganization measure to the FY 1974 State Department authorization bill.

[22]For example, a planning officer has been appointed with the intent of further expansion of personnel in this area; task groups of outside consultants have been created to study individual problems; funds for extramural studies are being sought.

[23]SCI personnel, however, participated in the development of policy initiatives in the interagency forum, where the origins of the initiative are difficult to trace. At times the Bureau was assigned primary responsibility for a particular policy development, although it may have been originated outside of SCI. See also footnote 18.

[24]See "Appointment of Members to Department of State Advisory Committee on Science and Foreign Affairs," U.S. Department of State Press Release No. 115, April 20, 1973.

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believe that OES is doing an adequate job; others think that its role in concluding international agreements is more hindrance than help. Staff people of the Science Advisor to the President look up to OES, but this is largely because of their own low competence in foreign affairs. Some outsiders say that the ranks of people in OES are too high for what they do.[25] Although SCI gained in stature within State in recent years, FSOs still view the assignment to OES as undesirable. Some individuals in OES, as distinguished from the Bureau itself, are well thought of by outsiders.

Department of State and the Technical Agencies

The nature of the problem of relationship between State and the technical agencies can be illustrated by a spectrum of conduct of the technical agencies in international affairs, a spectrum which ranges from the dynamism of NASA to the relative passivity and inertia of AEC.[26]

The activity of NASA in international affairs was primarily determined by two factors: (a) the philosophy and leadership of its Assistant Administrator for International Affairs, and (b) budgetary pressures.

The Assistant Administrator believes that agreements with foreign nations should be concrete programs from the beginning, and not generalized agreements whose content is to be filled in later. Thus, NASA seeks to avoid the pitfalls of being saddled with cosmetic agreements taxing the time of the agency's personnel. Moreover, NASA feels that it is important that the participating nations be actually involved in the programs themselves and thus have a greater incentive to contribute to the agreed-upon cooperative effort. To that end, NASA pursues a policy of committing the other party through specific financial contributions, even if small (10–20 percent of total costs). The Assistant Administrator has insisted that his personnel be well versed in foreign policy so as to integrate international agreements with the needs of foreign policy.

NASA became early aware of the uncertainty of its future after Apollo. Programs with foreign nations were formulated to which those nations made substantial contributions, thus making them cost-effective to the United States and appealing to the Congress.[27]

NASA thinks that technical agencies should be free to conclude agreements directly with their foreign counterparts. This would save time, reduce the potential for missed opportunities caused by delays arising from the necessity to act through several echelons, and avoid the possibility of resentment abroad.[28] The State Department should be kept informed and represented at negotiating sessions to make sure that U.S. foreign policy interests are not jeopardized.

Unlike NASA, AEC did not evolve any particular philosophy with regard to foreign affairs. AEC deferred to State in policy matters; if State wanted an international agreement, AEC would conclude one. However, this does not mean that the Agency's interests were not reflected in the nature of the concluded agreements. These interests—perhaps not always fully perceived by AEC's key officials, but nonetheless present—were as follows:

1. AEC, like most technical agencies, did not like multilateral programs. Their management is complex and frequently involves political considerations which create difficulties. It preferred bilateral programs involving exchange of information and scientists. Such programs are simple, they provide an opportunity for AEC personnel to travel abroad and to exchange views with foreign colleagues.

2. Unlike NASA, AEC had no incentive to enter into joint programs with foreign nations to save money. Funding was never critical for energy R&D and, with the outbreak of the energy crisis, it has become generous. In AEC, individual program managers determined the nature of international agreements within their respective areas, and joint programs with foreign nations designed to save money might have cut their own budgets.[29]

[25]Evidence tended to confirm that OES is top-heavy. As of early January 1975, a half of OES personnel actually on board consisted of supergrades (0–2, GS-16, or above). Less than one-third were FSOs; most were FSRs and a few GSs.

[26]The Energy Research and Development Administration (ERDA) came into operation in January 1975 and absorbed the R&D functions of AEC. Under ERDA, an Office of Assistant Administration for International Affairs was created and AEC's old Division of International Programs was placed within this Office. This analysis is based on research completed in early January, shortly before the establishment of ERDA. The situation in ERDA is too recent to assess, but since ERDA's international programs are under new leadership, a major departure from the past may take place.

[27]For example, a multilateral post-Apollo project on the space shuttle with Western Europe to which the latter is contributing in excess of $400 million and the Helios Project, a bilateral program with West Germany for a solar probe which involves a total of $260 million, with West Germany contributing $180 million.

[28]Usually a government-to-government agreement is necessary first to enable a technical agency to undertake negotiations with a foreign technical agency. State is responsible for concluding government-to-government agreements. In a number of cases, State also chairs meetings or delegations involving agency-to-agency negotiations.

[29]Whenever an international agreement was requested by State, personnel of the AEC Division of International Programs would approach technical program managers for the kind of program they consider desirable or feasible to undertake. There is no evidence that the interests of U.S. foreign policy were

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As a result, AEC's international programs are primarily arrangements providing for exchange of information and scientists. They provide no funding, except for occasional travel expenses. They are mostly bilateral. Even when, at the Washington Energy Conference (February 1974), the Secretary of State called for large multilateral R&D programs which would save money and strengthen ties among energy-consuming nations,[30] the outcome was much less than one would expect. State, in effect, delegated negotiations on these programs to AEC, and the result was predictable—a few small-scale programs, involving limited funding, and a stress on exchange of information.[31]

These two cases suggest that the failure of State to generate conceptual guidance and effective leadership can result in at least two different patterns of behavior: (a) an effort on the part of the technical agencies ("constituencies") to fill the vacuum by developing concepts and dynamism of their own which may or may not coincide with the national interest; (b) a perfunctory deference to State combined with inertia which, in effect, tends to protect institutional interests.

Science and Technology in the Agency for International Development (AID): Present Organization vs. New Requirements of Foreign Policy

The paradox of science and technology in AID is that its greatest promise lies in two offices which, at present, are on the fringes of the Agency's activity and enjoy very low priority and attention.

The Agency's priorities overwhelmingly lie in three areas: (a) food and nutrition; (b) population planning and health; and (c) education and human resources development. Ninety percent of AID's budget of $1,030 million (FY 1975) goes into these areas. The objective is to raise the level of less-developed countries (LDCs) in the three priority areas and then to "graduate" them, i.e., drop them from the list of AID countries. A nation thus becomes a "post-AID country" not on the strength of its *industrial* development (where most of the civilian technological spectrum belongs), but largely on the strength of its relative success in solving its food, population, educational and health programs.

The situation with science and technology in AID in the priority areas is reasonably satisfactory. However, this is not so in science and technology pertaining to industrial development. The Office of Science and Technology (OST) and the Office of Special Technical Services (STS), both in the Bureau of Technical Assistance (TAB), are concerned with this sector.

OST's mission is to assist LDCs in scientific and technological development in all areas other than the aforementioned priority areas. It is a small Office of seven professionals and a budget of $3.6 million (FY 1975). OST is severely handicapped in its activity by two phenomena: (a) a general lack of appreciation of science and technology in AID, and (b) a mission which, in effect, is broader than the mission of AID and which does not coincide with the Agency's priorities. In the face of multiple bureaucratic difficulties, OST has made progress in developing a body of knowledge and a capability in American institutions to aid LDCs, but only a small part of OST's effort—at best, 20–25 percent, as measured in terms of expenditures—gets to where it belongs, the LDCs.[32]

While the mission of OST is on the fringes of AID, STS is unique in that its mission is *completely* outside of the mission of the Agency. It is the central point within the U.S. Government to assist non-AID countries in obtaining U.S. technical assistance, public and private, on a reimbursable basis.[33] STS has a staff of four professionals and in FY 1974 it processed $6 million worth of reimbursable aid.

The significance of STS and, to a lesser degree, that of OST becomes clear when the function of these two offices is placed in the context of a major new development in foreign assistance: a growing shift from *concessionary* to *reimbursable* aid. This is caused by availability of petrodollars.

Arab oil nations are energetically turning to in-

clearly, if at all, presented to program managers. There is no indication that top leadership of AEC was usually involved or provided guidance for international programs. In some cases where top AEC leadership was involved, the origins of major international initiatives can be traced to the Agency. This appears to have been the case with the proposal to share uranium enrichment technology with Western Europe (1970–71), on which AEC and SCI cooperated. Because of a number of problems, including those of classified material, this proposal was not implemented.

[30]See "Opening Remarks of the Honorable Henry A. Kissinger, Secretary of State, Washington Energy Conference, Washington, D. C., February 11, 1974," U.S. Department of State, Press Release No. 46 (February 11, 1974), p. 4.

[31]For the results of the negotiations, see Energy Coordinating Group, Ad Hoc Group, "International Cooperation on Energy Research and Development; Report" (U.S. Department of State Document, ECG/ERD/36 final, June 6, 1974). Multiple political, commercial and technical difficulties were cited for the meager outcome. Difficulties did exist, but there is no evidence that AEC even proposed a major multilateral program.

[32]The single most important handicap in getting OST efforts to LDCs is the fact that they must be requested by LDCs through a local AID mission or the mission itself must ask for them. LDCs by far do not always have a clear idea what assistance they want in science and technology, and AID missions have a disincentive to ask for assistance outside of priority areas.

[33]STS has statutory authority for this activity under Sec. 607(a) of the Foreign Assistance Act.

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dustrial development to provide a more permanent foundation for their economies than current petroleum revenues. This will require a massive infusion of technical assistance paid for by oil-producing nations. A portion of petrodollars will eventually find its way into LDCs, either as grants, loans, or investments. Technical assistance, also on a reimbursable basis, will have to come from advanced nations. Moreover, the United States has a strong interest in promoting reimbursable assistance as much as possible, thus perhaps expanding its magnitude.

Estimates of surplus currency in the hands of oil-producing nations for 1980 range from $150 to $480 billion.[34] This money must be recycled, and reimbursable assistance, public and private, avoids problems associated with direct purchases of U.S. enterprises or investment in short-term securities. On the contrary, it would stimulate the U.S. economy, provide an outlet for surplus technical personnel, contribute to vigor and viability of U.S. policy with regard to oil-producing nations, and tend to stabilize Arab countries through industrial development.

In short, we are witnessing a new and important development whereby concessionary foreign assistance will significantly decline and reimbursable assistance, amounting to many billions of dollars annually, will emerge. The nation's technological capability will have to be organized and coordinated for this purpose. New opportunities will arise for science and technology as an instrument of foreign policy. At present, the importance of the new situation is not fully perceived in the U.S. Government[35] and, in organizational terms, it is complicated by two factors.

First, the experience of AID and the skills of its personnel are at variance with the requirements of reimbursable technical assistance. Aside from embracing the spectrum of technology which is outside of the Agency's present priorities, reimbursable technical assistance (a) requires the ability to act in a competitive environment, since the United States will be competing with other advanced nations for rendering the assistance; (b) makes the receiving country the deciding agent on the nature of the assistance and its priorities. AID, on the other hand, has no experience in a competitive setting and it is the donor country which principally decides on the nature and priorities of concessionary assistance.

Second, bilateral commissions recently created for the purpose of establishing close relations with selected countries (including oil-exporting nations) are being involved in reimbursable technical assistance. There is thus a potential danger of organizational distortions and inadequate over-all supervision in reimbursable technical assistance, especially as it grows in magnitude.[36]

ORGANIZATIONAL OPTIONS

The Office of the President's Science Advisor

Two principal options will be considered here: (a) leaving the Office of the President's Science Advisor in NSF and (b) placing it in the Executive Office of the President.[37]

Considering that NSF is not a powerful organization and does not appear to present a major problem of conflict of interest between the two functions as Director of NSF and as the President's Science Advisor, the option of leaving the science and technology advisory apparatus in NSF is a viable one. However, important changes in the present organization, outlook, and use of the Office of the President's Science Advisor seem necessary.

I. The science and technology advisory apparatus must have a clear perception of its role as representing the President and his responsibility for the nation as a whole, and it must be guided by that role. To be effective, the President himself and his key officials must come to have a clear perception of this role. Placing the Science Advisor in the Domestic Council would increase his exposure to societal problems and decision-making, thus contributing to change in his outlook and effectiveness, although this involvement might be at a cost to the foreign policy aspect of his activity. A greater personal use of the Science Advisor by the President is a corollary to the perception of his role.

[34]These estimates are by a Brookings Institution study and the World Bank, respectively. They are scaled-down projections; earlier estimates were higher. "All About the New Money" *Newsweek*, February 10, 1975, p. 60.

[35]Some awareness of the potential of reimbursable assistance is beginning to emerge in Congress. Effective January 1975, STS has been allocated $1 million to stimulate reimbursable assistance (including travel abroad for this purpose). Up to that time, the activity of STS was passive—it had to wait for a request for reimbursable assistance.

[36]At present, the activities of the bilateral commissions are coordinated by the Under Secretary of State for Economic Affairs with the assistance of an interagency steering group. This arrangement is not likely to meet future requirements of reimbursable technical assistance conducted by the commissions.

[37]There is a third option, viz., to establish the science and technology advisory apparatus as an independent body. It has two important liabilities which would make it inferior to the other options: (a) it may develop a vested interest and a constituency outlook of its own; (b) it is not likely to provide an effective mechanism for consideration of both civil and military technology. This option was proposed by Senator Charles M. Mathias, Jr. (R., Md.) in S.79. See *Congressional Record*, Jan. 15, 1975, pp. S148–S150.

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2. A stronger leadership, both managerial and intellectual, is needed in the Science Advisor's staff. To assist this, the three staff offices of the Science Advisor—STPO, OEP, and NDRA—should be merged, thus facilitating the task of capitalizing on their complementarity.

3. The international science and technology policy component of the Science Advisor's Office needs strengthening. It should not duplicate the function of OES personnel, but focus instead on (a) systematically apprising the Science Advisor and the staff of U.S. foreign policy interests and implications of issues they are involved in; (b) interface between domestic and international problems.

There are, however, three issues which the *locus* of the Science Advisor in NSF cannot satisfactorily resolve:

1. A proper balance between the rational and the constituency decision-making. The science and technology community is highly pluralized and, as a result, the constituency decision-making tends to prevail. Some shift of balance in favor of the rational decision-making would be appropriate. A proper perception of the Science Advisor's role accompanied by reorganization of his staff recommended above would effect some of this shift. However, "clout" is essential to ensure that certain key decisions provide the "right" kind of balance between the two. Other things being equal, the *locus* of the Science Advisor at the White House does offer more "clout" than NSF.

2. The issue of representing the constituency—scientists and engineers. Events of recent months indicate that this constituency will not be satisfied with anything less than a restoration of the Science Advisor to the White House.[38] Claims of a constituency of this caliber and talent cannot be easily disregarded if one accepts the legitimacy of constituency roles in our system, which one properly must.

3. A mechanism for balancing civilian and military considerations in science and technology. The importance of this area is such as to preclude a simple solution like letting the Science Advisor at NSF provide a balance between the two sectors.

For the above three reasons, the option of placing the scientific and technological advisory apparatus in the Executive Office of the President would be more desirable.

A number of proposals have been advanced to the effect that a science and technology apparatus, placed in the Executive Office of the President, should consist of a three-member Science and Technology Council.[39] There are distinct advantages of this approach:

1. No single individual combines the qualities necessary to provide high-caliber advice in science and technology policy.

2. The characteristics of scientists and engineers differ significantly.[40] From the point of view of constituency representation, it would be desirable to have a scientist and an engineer on the Council, and not just a single Science Advisor.

3. Both scientists and engineers have important limitations in appreciating the more complex and indirect impact of science and technology on society and designing appropriate means for coping with it. Moreover, scientists and engineers have not always been successful in articulating problems and issues and presenting them with appropriate emphasis to command attention.[41] Accordingly, a social scientist with a keen appreciation of science and technology, of society's needs, and of the governmental process (familiarity with which is essential for designing and implementing solutions for societal problems), might be an appropriate addition as a third member. His presence on the Council would help neutralize a constituency image which might

[38]In the fall of 1974 and early 1975, a number of professional organizations of scientists and engineers came out with resolutions and requests to the President to restore the science advisory apparatus in the White House. See e.g., "Scientists Want the President's Ear," Press Release of the Federation of American Scientists (FAS), dated December 27, 1974; also, a letter from Dr. Alan C. Nixon, Chairman, Committee of Scientific Society Presidents, to the President, dated October 9, 1974.

[39]See, e.g., National Academy of Sciences, *Ad Hoc* Committee on Science and Technology, *Science and Technology in Presidential Policy-Making* (Washington, D.C., June 1974); "National Science Policy and Priorities Act," *Congressional Record*, Vol. 120 (October 11, 1974), pp. S19141–6; "Organization for Science and Technology in the Executive Branch; AAAS White Paper," *Science*, Vol. 187 (March 7, 1975), pp. 810–814.

[40]For characteristics of scientists, see footnote 3 above. Engineers are similar to scientists in that they are inclined to promote science and technology and regard this activity as good in its own right. However, having usually been reared in the corporate (and sometimes in the governmental technical) environment, engineers are much more sensitive than scientists to priorities and cost-effectiveness in the support given to, and the implementation of, technical programs. They are also much more instrumentally oriented towards science and technology, in the sense of using them as an instrument to achieve a goal, than scientists are. Their appreciation of economic factors is better than that of scientists, but not necessarily of political and social factors. As a result, their understanding of the impact of science and technology is broader than that of scientists, but it is still significantly limited. Many of them share business values, in particular, the concept of *laissez-faire* and general noninterference of government with business. Cf. Paul Ritterband, "Economic Realia, Values and Migration" (Department of Sociology, Columbia University, July 1969) pp. 16–21; also, personal observations.

[41]Cf. Eugene B. Skolnikoff and Harvey Brooks, "Science Advice in the White House? Continuation of a Debate," *Science*, Vol. 187 (January 10, 1975), p. 38. Skolnikoff and Brooks point out that "basic researchers and academic scientists have a professional bias which assumes that if only the facts and understanding are made available, society will automatically appreciate their implications and act accordingly." They cite a number of cases where reports by PSAC failed to produce impact, which could also be traced to deficiencies in analysis and a "deep intellectual gulf" between the scientific analysis and the policy pressures and options faced.

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still linger around the science advisory apparatus.

A disadvantage of the White House option is that limited effectiveness at the White House is much more noticeable than at NSF and this can do serious damage to science and technology policy, the nation, and to the scientific and technological community as a group. The appointment of a social scientist to the Council of Science Advisors may not save the science advisory apparatus from failure, but would help in that he would save scientists and engineers from being blamed for it alone.

The Department of State

The solution of the problem of science and technology at State is vastly complicated by the fact that it is closely tied to the general outlook and values of the Department as a whole. A more radical restructuring of the Department might be necessary to produce effective results.[42] Recommendations below are applicable to either option.

1. OES needs infusion of new talent. The emphasis of SCI on technical background of its personnel appears to have been excessive. What is important is high quality of personnel, embracing policy-oriented scientists and engineers as well as social scientists with a keen appreciation of science and technology. A continuous effort should be made to attract bright FSOs into OES. To that end, a primary functional skill—such as "science and technology policy"—should be introduced and made rewarding in terms of promotion and career.[43] Temporary appointments of top people from the academic world could both invigorate OES and strengthen its image within the Department.

2. The analytic and conceptual foundation of OES needs strengthening. The following measures would serve this purpose:

a. Establishment of a unit in INR to support OES and availability of funds for extramural studies.

b. Conduct of long-range planning. The latter is a controversial subject which, historically, has not been particularly successful at State. However, it might be more successful in science and technology policy than anywhere else at State. Relatively speaking, developments in science and technology and their potential impact are more predictable—as much as 20 or 30 years in the future—than, say, political developments in the Middle East. A viable long-range planning unit in OES might pave a way for acceptability of long-range planning at State in general.

c. Closer ties with the academic community and the National Academy of Sciences and the National Academy of Engineering. To that end, a joint NAS/NAE committee might be established for consideration of problems of mutual concern with State; alternatively, an existing committee could be designated for this purpose.

3. OES should provide stronger conceptual guidance for the technical agencies. It should ensure that foreign offices of the technical agencies and other relevant personnel are well informed about foreign policy interests of the United States in each case and not just told that "State wants" this or that. An NSC Interdepartmental Group (IG), chaired by the Assistant Secretary of OES and including the heads of foreign offices of the technical agencies, would provide a suitable coordinating mechanism for international science and technology policy. It should be established.

A few words should be said about S/P. Since S/P is so close to the Secretary, it would be futile to attempt to transform it into something he does not want it to be. However, addition of one or two broad-gauged, future-oriented officers with a solid foundation in science and technology policy would strengthen S/P as presently designed. A stronger capability in science and technology policy at S/P might also serve as a catalyst in assisting OES to bring about constructive internal change needed in that Bureau.

Agency for International Development (AID)

The rise of reimbursable technical assistance presents basically two organizational options: (1) to accommodate reimbursable assistance within AID and to let it grow there, eventually nearly completely supplanting concessionary assistance; (2) to establish a separate organization for reimbursable technical assistance.

The establishment of a new agency—Agency for Technology Export and Application (ATEA)—appears to be the preferable option. It would coordinate or, as appropriate, absorb the activity of the bilateral commissions in reimbursable technical assistance. As an interim step, STS and OST could be placed directly under the Deputy Administrator of AID so as to give them higher visibility, prevent restrictions on their growth within TAB, and facilitate cooperation between them. These two offices might comprise the nucleus of ATEA.

[42]See, e.g., the proposal by Robert O. Keohane and Joseph S. Nye to establish a new position of Undersecretary of State for Economic and Scientific Affairs in "Organizing for Global Environmental and Resource Interdependence," this volume.

[43]A category in the "skill code" of the Department which comes the closest to "science and technology policy" is "international relations officer, scientific affairs." Only two foreign service officers, both reserves, had this category as their primary skill. Being lateral entrants and because of their background, they apparently had no choice but to be so designated.

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Congressional Perspectives on Environmental and Resource Interdependence

Alton Frye
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The U.S. Congress is a crucible, a cauldron, a churning vessel in which the interplay of politics and public policy is more apparent than it is in any other governmental institution. The Congress, in fact, is nothing less than a metaphor for America, a nation in which citizens share common values, but divergent interests.

In appraising the performance and prospects of Congress in the vast domain of environmental and resource policy, one learns quickly to abandon any preconception of the legislature as an institutional backwater in which these arcane issues rarely come to the surface.[1] For many years, Congress has been a central arena for the resolution of contending policies in these fields. More than being a mere reflector of emergent public anxiety regarding the depletion of natural resources and the deterioration of the planet's environment, the Congress has frequently demonstrated a prudent sensitivity to the mounting problems of ecology in the widest sense. Opinions will vary as to how well Congress has fulfilled its obligations to protect the nation's and the globe's natural heritage, but only the uninformed can believe that Congress has been either passive or uninterested in these complex challenges.

In order to weigh opportunities for improving congressional participation in these crucial policy realms, let us review a few of the ways in which Congress has addressed such questions in the past.

Congress has always afforded visible evidence of the chronic tension between the demands of economic growth and the requirement to conserve dwindling resources. Understandably, during the bustling decades of continental expansion and "manifest destiny", the emphasis was on exploiting the unparalleled physical resources which nature placed at the disposal of the United States. Yet, for all the exploitative characteristics associated with the spread of the American nation to continental dimensions, an undercurrent of the country's history has always been a reverence for the land and for nature's bounty. This undercurrent, largely rooted in a religious culture which recognized an obligation to husband God's gifts, fed many streams of legislative activity.

The right to homestead was coupled with an obligation to settle and cultivate the land. The Congress established and funded the Departments of Agriculture and Interior with important mandates to manage the country's vital resources in the interests of both living and future generations. It underwrote a phenomenal system of land grant colleges and other study and research institutions, more often than not with an eye to conservation as well as development of the land, forests, and waterways. With the closing of the frontier at the end of the 19th century and the incipient awareness that the American cornucopia was not boundless, conservationists like Gifford Pinchot found ready allies in Congress as they attempted to focus America's energies and concern on the task of preserving and enhancing the country's environment.

In many cases, Congress responded to the twin pressures of economic interests and conservation by trying to split the difference between them, striking a balance between facilitating profitable activity and impeding destructive exploitation. Obviously, this balance was easiest to attain when economic self-interest ran most clearly in the same direction as environmental demands. This congruent interest was most evident in programs like those of the Soil Conservation Service, to which Congress proved consistently supportive. The experiences of

[1] I am indebted to Mr. Steve Hughes and Mr. Harvey Sherman of the Congressional Research Service's Environmental Policy Division for supplying a number of studies and publications, as well as for their suggestions regarding useful contacts and interviewees.

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drought and dust-bowl, memories of eroded hillsides and barren farms in many parts of the south and midwest, persuaded Congress no less than the Executive Branch that without institutional arrangements to promote sound conservation practices, there would be no economic future for many citizens.

Yet Congress also supported many conservation programs in which there was no such happy coincidence of early economic benefit and environmental insurance. The work of the U.S. Forest Service in the Department of Agriculture and the National Park Service in the Department of Interior has required congressional approval of Federal programs lasting several generations and explicitly devoted to conservation. Without continuing congressional support for this mission, it is inconceivable that the Interior Department would today retain custody of 750 million acres of land or that the national forests and grasslands administered by the Department of Agriculture would comprise over 186 million acres. Similarly, Congress over the years has taken a remarkably long-headed view of flood control, watershed, and river basin projects in which it has had to weigh shorter term economic and financial burdens against longer term environmental and economic dividends. However mixed the results may have been from an environmental standpoint, and however significant the so-called pork barrel motivation may have been in spurring large public works projects, Congress' long-standing and generous commitment to the endeavors of the Corps of Engineers, the Tennessee Valley Authority, and similar agencies has been laden with genuine environmentalist overtones.

These general observations are but prelude to the main theme of this essay. The environmentalist/conservationist theme in congressional decision-making forms an important context for understanding the manifold elaboration of Congress' role in recent years. Both in the past and today, the legislature's major preoccupations in these fields have been domestic, rather than international in character. Increasingly, however, and in some respects surprisingly, Congress has turned its attention to the international dimensions of environmental and resource questions. Capitol Hill has been by no means laggard in recognizing the complex interdependencies which exist between America's environmental and resource needs and those of other nations. Since the end of the Second World War, and particularly since 1960, Congress has been both student and teacher in exploring these interdependencies. It has provided innumerable channels, usually more open than those available in the Executive Branch, for scientists and concerned citizens to raise the environmental implications of various policies. Congress' inquiries and enactments on environmental and resource questions have played a major role in educating the electorate to the gravity of the impending situation. They have also helped to sustain a necessary pressure on the bureaucracy, obliging it to intensify its planning and to advance recommendations for coping with such questions.

The vitality and diversity of Congress' activity in this field are measured less by the number of laws it has passed—though there have been many—than by the ways in which it has begun to probe virtually every identifiable sector of the problems which cluster at the intersection of environmental enhancement and resource utilization. There are very few related issues simmering in the research community or the Executive Branch which do not find their way onto the agenda of one or another congressional committee. One indication of the sheer volume of the legislature's activity is the fact that an estimated one-third of the laws enacted in the 92nd Congress were concerned with environmental and resource problems, many of them international in scope.[2] With the impetus provided by the oil boycott by Arab producers, the efforts of the 93rd Congress (1973–74) were centered even more heavily on the nexus of energy and environmental considerations.

Long before this flurry of contemporary interest, however, one can identify the genesis of legislative involvement in these affairs. The determination of many congressmen to protect America against the hardships associated with scarce resources in the Second World War and the Korean conflict generated major congressional efforts to encourage a program of stockpiling critical materials. From its beginnings the stockpile program was built principally on a national security rationale, with oversight of the national stockpiles and naval petroleum reserves vested in the armed services committees. Only gradually has this security-oriented focus on materials questions merged with the economic and conservation emphases which other legislative committees have brought to bear in later years.

One notes that even the relatively narrow national security rationales for stockpiling embodied a clear awareness of the fundamental interdependency of the United States and foreign nations. The stockpiling approach, which in an era of scarcity would have been condemned as hoarding if practiced by individuals, eventually appeared to many legislators as a necessary but insufficient response

[2]See *Congress and the Nation's Environment: Environmental and Natural Resources Affairs of the 92nd Congress*, prepared by the Environmental Policy Division, Congressional Research Service, Library of Congress, for the Committee on Interior and Insular Affairs, United States Senate, January 20, 1973. Particularly useful is Chapter 19, "International Cooperation," prepared by Harvey R. Sherman, pp. 777–820.

to the condition of mutual dependence. And to many leaders in the business and industrial communities the practice of occasionally selling off portions of the stockpile represented a repeated threat to the price structure on which a steady flow of investment in exploration and development of critical resources depended. Investigations by Senator Stuart Symington and others acquainted key officials with the double-edged character of stockpiling: it offered an attractive hedge against short-term scarcities of raw materials normally obtained abroad, but it tended to diminish the long-term expansion of supply because the very existence of large stockpiles made calculation of future profit margins uncertain. The extended and often painful exposure of Congress to the problems of stockpiling proved a useful education for a number of members.[3]

Two other threads with significant national security coloration helped weave the fabric of legislative sensitivity to environmental matters during the 1950's and 60's. One emerged in the labors of the Joint Committee on Atomic Energy, whose extensive hearings and reports on the biological effects of nuclear warfare did much to form a global conception of man's relationship to the planet. Often faulted for alleged willingness to sacrifice environmental needs to a desire to promote the use of nuclear energy, the Joint Committee was undoubtedly the decisive forum for illuminating the peril which scientists began to detect in radio-active fallout from nuclear weapons tests, prospective disposal of nuclear wastes in the oceans and elsewhere, and especially the profound danger to human safety and genetic integrity that would face even the survivors of any large-scale nuclear holocaust. It overstates the case only slightly to suggest that an entire generation of congressmen, not to mention journalists, academics, and other citizens, garnered their principal education in the hazards of nuclear energy through the publications of the Joint Committee. It overstates it not at all to say that the committee contributed immensely to the dawning public realization that man had acquired the capacity to jeopardize the atmosphere, the soil, and the oceans with potentially lethal pollutants. By feeding this apprehension, even while pressing forward with affirmative programs to exploit the potential of nuclear energy, the Joint Committee paved the way for later congressional alertness to problems of the environment.[4]

A second aspect of the Joint Committee's history also warrants some commentary. Although born out of the gravest dilemmas of national security, the Joint Committee on Atomic Energy, like the Atomic Energy Commission, consistently attempted to reconcile the nation's military needs with its political ambitions to build a peaceful international community. It represented an attempt to move beyond purely military control of the U.S. nuclear programs and to assure the ascendency of civilian direction, to ensure legislative as well as executive participation in high policy, and to open the door for international cooperation in nuclear energy whenever possible. While always ambivalent about the degree to which America's nuclear knowledge and capabilities should be shared with other countries, the Joint Committee did not fall prey to a hyper-nationalistic inclination toward nuclear monopoly. In general, it represented a cautious but positive influence on attempts to promote sensible international regimes for the varied applications of nuclear technology. In this regard it confirmed and reinforced the striking contrast between the disposition of the modern Congress to favor international approaches to common problems and the historic inclination of legislators prior to 1945 to minimize foreign engagements whenever possible.

Perhaps the most vivid lesson in the budding congressional anxiety over environmental hazards of nuclear energy was the prolonged debate over a nuclear test ban in the late 1950s and early 1960s. The dire genetic consequences of unlimited nuclear contamination provoked a great deal of legislative activity to speed action on the problem. In a pattern which recurs frequently among committees with overlapping jurisdictions, the technical explorations of the Joint Committee on Atomic Energy prompted the endeavors of other committees. The Senate Foreign Relations Committee, through its Subcommittee on Disarmament chaired by Senator Hubert Humphrey, became a principal advocate of an international treaty to limit nuclear testing. Even the persistence of Cold War behavior, including the Soviet Union's surprise abrogation of the 1959–61 test moratorium, did not deter the widespread congressional impulse to seek an accommodation on this issue. Thus, following the unexpected resumption of Soviet testing in the fall of 1961, legislative pressures for a more durable and verifiable accord remained. Senator Humphrey was

[3]See U.S. Senate, Committee on Armed Services, *Disposals from National and Supplemental Stockpiles*, Hearing, 92nd Congress, 1st Ses. April 7, 1971. Also see U.S. Senate, Committee on Government Operations, Permanent Subcommittee on Investigations, *Materials Shortages: Industry Perceptions of Shortages*, 93rd Congress, 2nd Ses., August 1974; and *Materials Shortages: Selected Readings on Energy Self-Sufficiency and the Controlled Materials Plan*, August 1974.

[4]Alton Frye, *The Hazards of Atomic Wastes*. Washington: Public Affairs Press, 1962. On some of the broad trends of congressional involvement in scientific and technological affairs, see the author's forthcoming *A Responsible Congress: The Politics of National Security*. New York: McGraw-Hill, 1975, chapter 6, "Congress and Science Policy". A notable recent investigation by the JCAE is *Environmental Effects of Producing Electric Power*, Hearings, Joint Committee on Atomic Energy, 91st Congress, 1st and 2nd Ses., Part 1 and Part 2 (Volumes I and II).

able to enlist Senator Thomas Dodd of Connecticut as an ally in support of a partial nuclear test ban. Though an arch skeptic of the Soviet Union, Senator Dodd was nevertheless deeply concerned by the threat to human welfare of massive thermonuclear tests. Persuaded that all except underground tests could be monitored confidently by U.S. intelligence systems, Senators Dodd and Humphrey, joined by nearly a third of the Senate, sponsored a resolution urging the Administration to seek a limited prohibition on testing. This congressional initiative played an important part in spurring the Moscow agreement of 1963 curtailing nuclear tests in the atmosphere, outer space, and underwater.

During these same years another major theme of congressional action incorporated several elements bearing on international cooperation in environmental and resource affairs. The creation of the sizable American space program after the remarkable Soviet achievement of Sputnik in October 1957 was marked by distinctive congressional emphases on the necessity of approaching these new endeavors from an international vantage point. Resolutions offered by Congressman John McCormack of Massachusetts and Senator Lyndon Johnson of Texas conveyed a felt need to seek peaceful cooperation in the exploration and use of outer space; they anticipated later U.N. declarations calling for cooperative development of space for the benefit of all mankind. There was, to be sure, a lingering congressional conviction that the nation's security interests must be protected in this new medium; Congress modified the Eisenhower Administration's proposed organization for space activities and made specific provision for military activities in this realm. But, as in the case of nuclear energy, the legislators quickly coalesced behind a primarily civilian institution, the National Aeronautics and Space Administration, in which to place basic responsibility.

From an early date, indeed almost automatically, Congress perceived that the space age demanded a global and cooperative response, even if its initial stages were highlighted by political competition between the United States and the Soviet Union. Thus, Senator Johnson, along with Senator Albert Gore of Tennessee and others who served as members of the U.S. delegation to the United Nations, early took the lead in attempting to outlaw weapons of mass destruction from outer space. Equally important, Congress proved quite ready to underwrite substantial programs of cooperation in space activities with dozens of nations. This sympathetic and attentive disposition on the part of Congress was facilitated by the establishment of separate committees in each chamber to oversee the efforts of NASA and related agencies. This proved especially valuable in the House where the Committee on Science and Astronautics became a welcome channel of communication between the political and scientific communities. Its mandate extended considerably beyond that of the Senate Committee on Aeronautical and Space Sciences; the House committee became an important factor in a broad range of policy issues involving science and technology.

Through these committees Congress became the patron of an enormous space program which encompassed numerous efforts of environmental significance. One such program was the TIROS weather satellite system and its successors which laid the groundwork for dramatic improvements in worldwide forecasting. Although Project APOLLO consumed the preponderant amount of the space budget in the program to land men on the moon, the House and Senate committees did much to protect NASA's basic programs of research and technology applicable to the earth's atmosphere and environment. It was the latter program probably more than anything else, which confirmed the importance of a global approach to environmental affairs. The new knowledge of the subtle interactions between human activities and the condition of the planetary environment is the indispensable building block of an international approach.

In the course of dealing with the space program several members developed a creditable sophistication in this field. Representatives Olin Teague and Charles Mosher, together with colleagues Ken Hechler, Alphonzo Bell, Joseph Karth, and Emilio Daddario, led the House Science Committee in broadranging investigations of science and public policy. They forged close working alliances with many figures in the scientific community, working closely with the National Science Foundation and the National Academy of Sciences in particular areas. Out of this committee also came the prime effort to equip Congress with improved organizational capacity to deal with issues of science and technology. Former Congressman Daddario led the way toward institutionalizing efforts at technology assessment, an attempt carried forward by his successor, John W. Davis, in alliance with Senators Edward Kennedy, Gordon Allott, Clifford Case, and B. Everett Jordan. Their endeavors over a period of years finally produced the Technology Assessment Act of 1972. This statute created the Office of Technology Assessment (OTA) as an advisory arm of the Congress, a new and unique information-gathering and analytic staff for the Congress. With a mandate to evaluate the consequences of technological change, the OTA is heavily committed to assisting Congress with the kinds of problems which dominate environmental and resource policy. Construed broadly by the OTA, the concept of technology assessment contemplates analysis of physical, biological, economic, social, and political implications of impend-

ing applications of scientific knowledge. In its first year of operations, the OTA has devoted a major fraction of its efforts to questions of food, energy resources, raw materials, and the oceans. In order to enlist the diverse skills required for such wide-ranging studies, the office pursues its work primarily through contracts with governmental or non-governmental institutions. Its requested budget exceeds $5 million in fiscal year 1976.

While the OTA's labors are only beginning to show results, it clearly represents an important and promising innovation in legislative machinery. The office functions under a bi-partisan congressional board composed of six Senators and six House members; and unlike other joint committees of the Congress, its director serves with the legislators on the board. This unique arrangement was facilitated by the appointment of Mr. Daddario, acknowledged to be the father of technology assessment in Congress, as the Office's first director. Under his direction, OTA has also recruited an outstanding Advisory Council chaired by Dr. Harold Brown, President of the California Institute of Technology. OTA seeks to make its work directly relevant to key committees concerned with particular technological issues, and to formulate its assessment agenda largely in response to requests from various congressional committees.

Though the Office of Technology Assessment represents a novel institutional response to the need for greater competence in these fields, other congressional staffs with longer histories have also moved to aid Congress on environmental and resource questions. The Congressional Research Service in the Library of Congress has added to its Science Policy Research Division a newer unit, the Environmental Policy Division. In addition, the General Accounting Office, through its Resources and Economic Development Division and other departments, has begun to perform program evaluations of environmental and resource activities.

These promising changes in the activities of the three central staffs which support Congress with program evaluation and policy analysis tell only part of the story. The old axiom that "Congress in committee is Congress at work" still holds true and the most suggestive measure of the legislature's growing involvement in environmental matters is the marked proliferation of subcommittees charged with relevant responsibilities. Over the last decade at least 15 subcommittees have been spawned in various committees of the House and Senate with specific charges to deal with environmental and resource questions. The Public Works and Interior Committees in both houses have been exceedingly active in the field; so have the Senate Commerce and Foreign Relations Committees, the House Interstate and Foreign Commerce Committee, and the Merchant Marine and Fisheries Committee.

The interaction of these numerous subcommittees, of course, has led from time to time to serious rivalry in setting policy. It is customary to lament this kind of rivalry, to score the kinds of friction which it breeds, and to portray it as destructive of sensible public policy. Yet in a number of respects the explosion of congressional interests in environmental affairs, signaled by the proliferation of subcommittees, has its healthier aspects. On some occasions competition among these units can help to energize the entire process, eliciting action on important questions which may have languished for a considerable period in the jurisdiction of a single committee. It is surely regrettable that, as William Ruckelshaus once lamented when he was Director of the Environmental Protection Agency, the EPA found itself under the jurisdiction of 17 congressional bodies. This redundancy creates tremendous strain on the responsible executive officials who are called to testify and otherwise respond to the conflicting demands of multiple legislative overseers. Impasse sometimes results, as in the 1972 deadlock between the Senate Agriculture and Commerce Committees on the issue of pesticide controls, and the interplay of personalities can damage the rationality of the policy process as members contend for leadership and credit on particular issues. Such contention is by no means limited to interparty relationships, but often occurs between members of the same party chairing competitive committees or subcommittees.

Granting that these tensions exist, there is another perspective on them to be noted. The rivalry among legislators can serve to energize the entire policy process. To compete for leadership on a complex problem a legislator must prove that he is informed and that his program is plausible; while distortions of policy do occur through excessive deference to the prerogatives of individual members, it is rare indeed for Congress to impose demonstrably unwise policy on the Executive merely because of the whims of a senior Congressman or Senator. Among other reasons, important issues are likely to have attracted the interest of other senior members of the Congress whose views may well differ among themselves. One is tempted to conclude that in environmental and resource questions, as in numerous other policy matters, the advantages in the multiplicity of committee oversight outweigh the disadvantages. In former years the monopoly of policy by small groups of legislators in certain committees occasionally bred dubious alliances among them and their bureaucratic counterparts. Political scientists frequently criticized this subtle erosion of the separation of powers through excessive intimacy between the principal congressional committees and bureaus of the Executive Branch.

Those hazards are largely avoided by the pattern

of committee interloping which has become prevalent in recent years. If, for example, it is not possible to obtain a thorough airing of proposals regarding ocean policy in the Commerce Committee's Subcommittee on Oceans and Atmosphere, there will be good prospects for doing so in the Subcommittee on Oceans and International Environment of the Foreign Relations Committee, or in one of the subcommittees of the House Merchant Marine and Fisheries Committee. It is probably accurate to say that the presence of so many legislative bodies concerned with these subjects increases the noise in the system, but it also enhances the likelihood that crucial signals will get through to at least some influential policymakers.

On balance it might well be useful to reduce the overlap among committees somewhat, and to rationalize the committee structures and jurisdictions along the lines recently considered and partially adopted by the House of Representatives. Yet it is unfeasible to design jurisdictions which match to perfection policy problems; new issues, especially those with such intricate ramifications as environmental and resource problems, will always defy old jurisdictions. If Congress were to refine and consolidate jurisdictions in this area, it would do well to avoid the reciprocal sin of killing valuable legislative constituencies which nourish lively interest in such issues. The members of these numerous subcommittees have generally acquired an important political interest in environmental problems, because they are both interested in the problems and in the appeal to their constituents which derives from an active role in this area. One hazards the guess that at least one hundred of the current congressmen and Senators have based their claims for election in significant degree on their records in environmental affairs. If this is seldom the dominant issue in political campaigns, it has become regularly a notable one. Considering the need to develop sustained congressional interest in this field, one can welcome the fact that the existence of many environmental subcommittees makes it possible for many legislators to acquire standing in the field.

These multiple bases for legislative activity prompt an additional observation. Without rearguing the perennial question of what a congressman's proper functions should be, one discerns that the redundancy of subcommittees can serve several functions. Among other things, this redundancy increases the opportunities for legislators to become policy entrepreneurs, generating and gaining attention for a variety of policy proposals. From the platform of a relevant subcommittee a Senator can command the attention of the key executive officials, at least some segments of the public, and his peers. Even without formal action by Congress, the surfacing of a policy proposal by an interested and well-positioned legislator can alter the dynamics of the bureaucracy in important ways. This is a significant advantage, since the mammoth proportions of modern government threaten perpetually to stifle imaginative approaches. By becoming catalysts for bureaucratic response, congressional initiatives can often produce their best results by inducing more thoughtful executive action.

Illustrative of this catalytic function was the role of the Senate Armed Services Committee's Subcommittee on Research and Development regarding the use of herbicides in Southeast Asia. Chairman Thomas McIntyre, understandably disturbed by reports of ecological damage from U.S. military operations in the theater, triggered a number of inquiries to determine the ecological effects of American defoliation in Vietnam and along the Ho Chi Minh Trail. Studies conducted under the auspices of the National Academy of Sciences and other groups tended to confirm the excessive risks of using one suspicious chemical, the so-called "agent orange." The subcommittee's active intervention in the matter, bolstered by other congressional and public demands, brought about an early termination of this program. Faced with the problem of destroying its substantial stockpile of 1.5 million gallons of the herbicide, or of transporting it back to the United States for reprocessing into safe weed killers, the Air Force remains under close congressional scrutiny to insure a safe disposal technique.

This episode, together with questionable uses of riot-control agents in the Vietnam conflict, helped revive congressional and presidential interest in the long dormant process of U.S. ratification of the Geneva Protocol. Active attempts by the Senate Foreign Relations Committee to persuade the Nixon Administration that the Protocol should be ratified without reservations ultimately succeeded in forging a compromise between the branches which permitted approval of the Protocol in late 1974, half a century after it was drafted. The commendable leadership belatedly shown by the Executive Branch in seeking approval of the Protocol and in undertaking vital commitments in the related field of biological warfare thus found sympathy on Capitol Hill.[5]

Similar inclinations emerged in Congress to curb the casual drift of executive agencies toward incipient exploitation of weather modification techniques as a form of environmental warfare. Military operations to impede hostile traffic by seeding clouds to increase rainfall in selected zones of Southeast Asia

[5]Representative Clement Zablocki also took an active and constructive part regarding these issues. See *Chemical-Biological Warfare: U.S. Policies and International Effects*, Report of the Subcommittee on National Security Policy and Scientific Developments of the Committee on Foreign Affairs, U.S. House of Representatives, May 16, 1970.

provoked immediate alarm in informed quarters of the Congress. The House Foreign Affairs' Subcommittee on National Security Policy and Scientific Developments, whose chairman Clement J. Zablocki has become a central figure in congressional deliberations on arms control, shared the concerns of the Senate Foreign Relations Committee's members Claiborne Pell and Clifford Case that such counterproductive military activities should be stopped before environmental manipulation entered the habits and arsenals of states at war. In 1973 the Senate endorsed a resolution offered by Senator Pell urging international agreement to ban "any environmental or geophysical modification activity as a weapon of war". While weather modification was specified in the resolution, its language was broader and sought to encompass a number of potentially harmful interferences with the environment. Comparable action is in prospect in the House of Representatives where Congressmen Donald Fraser and Gilbert Gude are pressing for a parallel declaration. In addition, Mr. Gude, building on the precedents of the Atomic Energy Commission and the National Aeronautics and Space Administration, has proposed that all government-sponsored research on weather modification be transferred from military to civilian auspices. He would not, however, disturb the essential meteorological services on which the Armed Services depend.

These constructive legislative initiatives contributed to a more forthcoming posture on the part of the Executive Branch. At Moscow in 1974 President Nixon and Secretary Brezhnev expressed themselves generally on the topic and further discussions have been underway since then to define a workable program for restricting such activities. These congressional actions have also assisted U.S. diplomacy in the United Nations, where much apprehension regarding environmental warfare has developed. If Congress had not penetrated this controversial domain, it is at least questionable whether the Executive Branch, given its tendency to cloak the topic under the gauze of classification, would yet have begun to move toward international restraints.

One of the striking features of recent congressional activities is the manner in which issues are linked internationally in political and economic terms, even when they are not directly connected in an environmental sense. The U.S. enactment of stringent clean air standards, for instance, has had tremendous implications for the thriving trade in foreign automobiles. Reportedly, the uncertainty of meeting the prospective standards through modification of the famous Volkswagen air-cooled engine obliged the manufacturer to introduce a technology wholly novel for the firm in several new lines marketed in the United States. And the rising share of the U.S. market claimed by Japanese cars seems attributable in considerable degree to the stiff air quality provisions imposed by Congress. An intricate feedback process is evident here, for the intense efforts of foreign manufacturers to meet the requirements of the American markets seem likely to enhance the environment in other countries as well, with cleaner and more efficient systems designed for the United States also entering the domestic markets of the producing firms.

It may be that Congress' rejection of executive recommendations to proceed with a supersonic transport (SST) program will also prove decisive in setting global standards regarding such aircraft. Proponents argued with some force that other nations would proceed with such systems for civil aviation purposes and that the U.S. interest lay in contending for technological leadership on this front, both to capture a large market and to insure a fully informed approach to the serious problems of environmental protection posed by the SST. The ferocious debate on this proposal melded international economic and environmental concerns, including elements of both noise and air pollution. In choosing to terminate the U.S. project the Congress signalled to France and the Soviet Union, the other potential SST producers, that any such planes would face the most stringent requirements before they could operate over or land in the United States, the focal zone of commercial aviation. And prospective customers for such planes or services were alerted that they posed significant dangers to environmental quality. While it remains unclear how far other nations will proceed with the SST airplane, the action by the U.S. legislature has raised great impediments to plans for moving international traffic into the supersonic age.

This type of linkage is frequently subtle and complex. The Senate Committee on Banking, Housing, and Urban Affairs, for example, has noted the interaction of the soaring costs of housing in the United States and the heavy drain on U.S. lumber and pulp supplies caused by Japanese purchases in this country. This international competition for timber resources has put steady inflationary pressure on the price of building materials for the American construction industry. In turn, this has had an impact in the deliberations of the House and Senate Interior and Agriculture Committees, where disputes over the proper management of American forest resources have flourished for years. The attractiveness of so-called clear cutting timber lands has grown in proportion to the acute stresses on short-term supply of lumber and pulp. As it is compelled to do time and again, Congress is working actively to reconcile the divergent interests at stake and to balance the swelling demand for timber against the imperatives of conservation.

One discerns a rising ambivalence in Congress regarding the extent to which the United States, itself the greatest consumer of raw materials of any nation, should be prepared to share its resources, even on a purchase basis, with foreign countries. National security and economic considerations have mingled, particularly in the wake of the energy crunch precipitated by escalating prices for Arab oil, to evoke a heightened wariness in Congress toward free trade in critical materials. Action on the controversial trans-Alaskan pipeline dramatically highlighted these evolving attitudes. When court action under the National Environmental Policy Act (NEPA) delayed the pipeline project, over 20 legislative proposals were introduced in Congress to deal with the dispute. In one of the most hard fought controversies of the 93rd Congress, the legislature eventually authorized construction of the pipeline and limited further judicial review of the venture. At the same time it based its action on the finding that "The early development and delivery of oil and gas from Alaska's North Slope to domestic markets is in the national interest because of growing domestic shortages and increasing dependence upon insecure foreign sources."[6]

Many members of Congress harbored worries that straightforward commercial exploitation of the Alaskan oil fields could lead to diversion of major portions of the output to the conveniently located Japanese market; the precise references to domestic shortages left no doubt that Congress intended Alaskan oil to serve the American market.

Congressional action on the pipeline revealed starkly that it was not prepared to rely even on our closest neighbor to collaborate in the project. It rejected the widely publicized alternative of a trans-Canadian pipeline to route oil from Alaska through a common corridor with an already planned gas pipeline through the heart of North America. To be sure, Congress did authorize and request the President to enter negotiations with Canada regarding the possible future construction of pipelines through its territory. In choosing this course, Congress not only disregarded the preferences of many of its midwestern members for a trans-Canadian pipeline which would guarantee their region's access to Alaskan oil, but it took the risks of exacerbating the budding controversies with Ottawa over cooperative access to resources in the Canadian and Alaskan hinterlands. As a synthesis of environmental, economic, and security factors, the Trans-Alaska Pipeline Act opted strongly for national self-sufficiency. To underscore the point, Congress also amended the Mineral Leasing Act of 1920 to forbid exportation of crude oil transported through the pipeline unless the President makes an express finding, subject to congressional veto, that such exports will not diminish the quantities available to the United States and are in the national interest. Certainly Congress was proceeding under rather grim circumstances and its action should not be read as a turn toward autarchy, but the legislation does contain warning signals for those dedicated to international approaches to resource problems.

Depending on one's point of view, other current trends in Congress may also be read as danger signs. The onerous dynamics of energy supply and demand have caused more and more congressmen to look to offshore supplies of oil and gas as essential to the nation's future economic health. Although estimates are notoriously erratic, some projections place the prospective flow of oil and gas from beneath the sea at more than 40% of the likely reserves available to the United States. Congress has already enacted major provisions to govern activities off the American coastline and through the Coastal Zone Management Act has established a grant program to assist adjacent states. Senators Hollings and Jackson, through separate efforts of the Commerce and Interior Committees, have concentrated on resolving conflicts between Federal and state claims to resources beyond the three-mile limit, which was the traditional U.S. territorial sea until recent years.[7] Beyond fears of environmental disasters caused by oil blowouts near fragile coastlands, and of disorderly development of shore facilities associated with such undersea exploitation, these endeavors have necessarily led legislators into ever closer involvement with the complicated problems of defining an acceptable and productive regulation of the oceans. There has been substantial legislative support for the continuing attempts to rationalize and make more equitable the international legal provisions governing access to ocean resources.

Mounting impatience with the international process is now visible, however; Congress has taken no final action, but the slowness of international negotiation and the inconclusive outcome of the 1974 Caracas Conference on the Law of the Sea have provoked a number of legislative initiatives to assert broader U.S. claims to exploit ocean re-

[6]See *Highlights of Energy Legislation in the 93rd Congress, 1st. Ses.*, a background paper prepared by the Congressional Research Service for the Committee on Interior and Insular Affairs, U.S. Senate, 1974, pp. 53–58. Congressman Mike McCormack led a notable effort to address the energy problem; see U.S. House of Representatives, Committee on Science and Astronautics, *Conservation and Efficient Use of Energy*, 93rd Congress, 2nd Ses., December 18, 1974.

[7]As one example of congressional exploration of these and related issues, see *Offshore Marine Environment Protection Act of 1973*, Hearings, Committee on Commerce, U.S. Senate, 93rd Congress, 1st. Ses., March 5, 6, and 19, 1973.

sources. With active support of the American Mining Congress and related interests, the Senate Interior Committee has given favorable consideration to the most far-reaching arrangements for mining the deep seabed. In the previous Congress there had already been proposals in the House to discourage the Administration from taking steps to vest control of deep sea resources in an international body.

Similarly, recent international disputes over fisheries rights have not elicited a consensus on international action, but they have prompted a number of legislators, particularly those with important constituent interests in the field, to advance broader national claims to exclusive rights to harvest the living resources of the sea in vast areas. In the closing days of the 93rd Congress the Senate enacted legislation advocated by Senator Warren Magnuson, whose service as Congressional Advisor to the U.S. Delegation to the Third U.N. Conference on the Law of the Sea had persuaded him that wider national claims to control of ocean resources were almost certain to prevail. The House, however, did not act on the measure; it remains for the 94th Congress to consider whether the United States should preempt international decisions in this field or await further diplomatic negotiations.[8]

As one would expect of so pluralistic an institution, Congress is of divided mind on these questions. Many members have pressed for orderly international approaches to problems of this nature, but the snail's pace of global accommodation, matched against the rising perception of imminent need for the ocean's resources, makes it difficult to fault the Congress for taking some preliminary steps to establish a national position in this field. It may even be that the process of international treaty-making can be expedited if all parties are clear that, from the standpoint of Congress, failure to establish an agreed international order will insure active U.S. competition to develop and use the sea's resources. That is one reason it is premature to castigate Congress for resurgent nationalism on these fronts. Congressmen are fully aware that excessively nationalistic approaches to the environmental and resource questions posed by potential development of the ocean would be bound to produce much friction and some danger of international conflict. It is not Congress, after all, which has shortened the timetable for international negotiation regarding the oceans, but sheer economic necessity which now lures numerous states to tap the sea's bounty. If reasonable progress toward defining sensible standards can now be made through the international mechanisms at work, there remains a solid stratum of legislative support for such arrangements.

A major explanation for this continuing internationalist sympathy in Congress is the fact that members have long since outgrown the fabled parochialism of old-time legislators. While responsive to constituent needs and pressures, the congressional leaders in these fields do not tune in to environmental and resource problems through exclusively domestic channels. Just as Senators Magnuson, Pell, Muskie, Case, and Stevens have been associated with U.S. delegations to various international conferences on the law of the sea, other legislators have also participated actively in the preparation and conduct of major international negotiations and conferences in these areas. As but one example, a vital part of U.S. preparations for the Stockholm Conference on the Environment in 1972 was the work of a U.S. advisory committee under the chairmanship of Senator Howard Baker, whose energetic service on the Public Works Committee and the Joint Committee on Atomic Energy has positioned him at a crucial crossroads in this field. Senator Baker, along with Congressman Mike McCormack of Washington, is one of the rare members of Congress with technical or engineering backgrounds, a valuable complement to their legislative roles. But other legislators without specific technical training have also been active in countless international forums dealing with these issues. Senators Pell and Case served as delegates to the Conference on the Human Environment, and returned with strong recommendations that the U.S. take a vigorous part within the multi-national framework for environmental cooperation designed at the conference. In reporting to the Senate, they regretted "that the desire for development has transformed the unifying potential of environmental concern into a politically divisive issue," but they were critical of the United States' performance at the conference precisely because of what they construed as the Administration's wholesale opposition to proposals designed to benefit developing nations.[9] On the basis of their advocacy, the Foreign Relations Committee led the way in authorizing $40 million for U.S. participation in the U.N. Fund for the Environment; $7.5 million was appropriated initially, with additional funds to be available in future years.

[8]See *The Third U.N. Law of the Sea Conference*, Report to the Senate by Senators Claiborne Pell, Edmund Muskie, Clifford Case, and Ted Stevens, advisors to the U.S. Delegation (Caracas), February 5, 1975.

[9]See U.S. Senate, Committee on Foreign Relations, *United Nations Conference on the Human Environment*, report to the Senate by Senators Claiborne Pell and Clifford Case, 92nd Congress, 2nd. Ses., October, 1972. See also *Report of the Secretary of State's Advisory Committee on the 1972 United Nations Conference on the Human Environment: Stockholm and Beyond*, (Washington, D.C., U.S. Government Printing Office, 1972).

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In observing the value of including legislators as participants in U.S. delegations to international conferences, several cautions are in order. From the congressional standpoint there is a danger that in the process members will be co-opted by the executive. Understandably, members would be reluctant to serve as mere spokesmen for views formulated "downtown", or to accept membership in delegations under circumstances which abridged their right to form an independent judgment when reviewing the outcome of any negotiations. One discerns a rising apprehension in Congress about this problem. On occasion some members, Senator Stuart Symington among them, have refused to state the U.S. position in an international forum unless they had broad authority to draft their own remarks, an option which concerns not only the rhetoric but the substance of policy. Yet most members of Congress remain eager to take part in such activities, both for the educational opportunities they afford and for the honor of serving as a national representative. The practice is more beneficial than not, provided the legislators do not feel boxed into supporting the executive branch uncritically.

Perhaps the prevailing custom is sufficient to protect the separation of powers: individual congressmen and senators serve on delegations, speak for the United States according to agreed texts, but retain the option not to speak when they differ basically with executive policy, or when they believe a premature expression on their part will jeopardize their standing to perform an independent assessment when the matter is presented to Congress. In some instances it would be best for members of Congress to limit themselves to the status of observers, forswearing a more active role in a conference in order to maintain their independence. A hard and fast rule regarding legislative service on international delegations would probably be unwise. Congress and the nation are well-served by such experiences. One can best rely on the good judgment of individual members to safeguard their personal and institutional integrity in particular circumstances—and on the critical eye of their peers in Congress to accept or discount their views accordingly.

It is noteworthy that, quite apart from multilateral approaches to environmental needs, Congress has pressed the Executive Branch to incorporate environmental criteria in decisions regarding bilateral foreign aid programs. Over the resistance of the State Department, the House Merchant Marine and Fisheries Committee in 1971 and subsequently has insisted that the Agency for International Development prepare environmental impact statements, as required under NEPA, for projects abroad. Reluctantly, the State Department moved in 1972–74 to comply in part, but the issue remains a point of minor friction between the branches. Some treaties dealing with oil pollution and similar subjects now go to the Senate accompanied by impact statements. Congressman John Dingell and other sponsors of the NEPA process have been seeking to insure that the executive extends the domestic requirement of thorough environmental analyses to U.S. programs throughout the world, a campaign the legislators appear slowly to be winning. On this front, again, the striking fact is the degree to which Congress has proved itself the protector of both international and environmental interests.[10]

Many other legislators have acquired an international appreciation for these problems through participation in activities like the NATO Parliamentarians Conference, which has repeatedly explored such issues as common dilemmas of industrialized nations. The 1974 Rome Conference on the World Food Problem found U.S. delegates like Senator Richard Clark among the most vocal participants.[11] Indeed, Senator Clark and his congressional colleagues were the most animated spokesmen for a more generous U.S. posture in meeting the global food emergency through expanded distribution of U.S. supply.

One cites these episodes not as definitive evidence of a perpetual legislative yearning for international organizations and procedures, but to stress that congressional attitudes are both informed and exceedingly diverse on most of the key issues. At many points in the complex of environmental and resource concerns Congress stands poised between a preference for international collaboration, if possible, and an acceptance of national action, if necessary. This ambivalence is intrinsic to the situation confronting the country, not to some peculiar characteristics of the Congress. The most profound commitment to international collaboration may not be able to induce a sufficient cooperative response from a still primitive global system. In many respects Congress has been ahead of the Executive Branch in understanding the interdependencies which now constrain U.S. policy. Under the Mining and Minerals Policy Act of 1970 and the National Materials Policy Act of 1970, Con-

[10]U.S. House of Representatives, Committee on Merchant Marine and Fisheries, *Administration of the National Environmental Policy Act (Public Law 91–190)*, 92nd Congress, 1st Ses., (House Report No. 92–316), June 29, 1971.

[11]Illustrative of the active congressional interest in these matters is the hearing before the U.S. Senate Committee on Foreign Relations, *World Food Resolution*, 93rd Congress, 2nd. Ses., July 11, 1974. Senator Hubert Humphrey and his colleagues pressed Ambassador Edwin Martin, coordinator of U.S. participation in the World Food Conference, to advance more ambitious proposals at the conference than the Administration seemed to contemplate.

gress directed the Secretary of the Interior to file annual reports on the demand and availability of needed minerals; it created a Special Commission on Materials Policy to recommend long-term guidelines to assure optimal utilization of resources. The reports from the Secretary and the Commission confirm that the United States is headed for a widening gap between its domestic demand for materials and its capacity to produce them, a gap soaring from $2 billion in 1950 to $12 billion in 1971 and a forecast of $64 billion a year by the year 2000.[12] The impending hostage condition of the American economy is well known in the Congress, which will be monitoring these trends closely.

Nevertheless, these trends have not dissuaded Congress from adding the burdens of extensive pollution control activities to the other responsibilities of American business and industry. In doing so, the legislators have shown themselves sensitive to the possibility that the costs of pollution control might diminish the competitive standing of American business abroad. Congress has required the Secretary of Commerce to report periodically on the effects of pollution control activities on international trade. Two reports have been filed indicating that American producers have not been unduly handicapped in the export trade because of environmental costs. The relationship will no doubt receive further study in Congress. Congressional activity on this topic has already had a beneficial impact in spurring the work of the Organization for Economic Cooperation and Development, which has been studying an international code for environmental policies in light of their economic consequences.

The scope and diversity of congressional involvement in these fields invite the traditional conclusion that Congress is handicapped by its fragmentation and decentralization of responsibility for environmental and resource questions. It is exactly that conclusion and the temptation to conclude that consolidated responsibility is more rational which have generated efforts to create a Joint Committee on the Environment. In fact, each house of Congress has previously passed one variant or another of the proposals to create such a joint committee, which would have no legislative authority but would conduct wide-ranging studies along the model of the Joint Economic Committee. Other plans go beyond these recommendations; for instance, the final report of the National Commission on Materials Policy urged the creation of a Department of Natural Resources to be supervised by a joint congressional committee.[13] The President recommended such a department in 1971, building it principally from existing agencies of the Department of the Interior. Several committees conducted hearings on the reorganization proposal, but took no final action, although one element of the scheme, the Energy Research and Development Administration (ERDA), came into being in 1974. Should such a department be established, without consolidation of the congressional committee structure, one learns the irony that it would fall under the jurisdictions of nine committees, compared with only five which have jurisdiction over the Interior Department.

In view of other efforts to adjust committee jurisdictions related to the environment, the fate of the joint committee plan is uncertain. The vast increase in the numbers of subcommittees during recent years has virtually wiped out the benefits of committee realignments resulting from the Legislative Reorganization Act of 1946. The totally unmanageable schedules, which now consume the time and energy of legislators in both houses, have stimulated much resistance to the addition of yet another committee, although there is general recognition that a Joint Committee on the Environment could perform valuable functions. Part of the difficulty lies in the fact that, like the former proposals for a Department of Science which flourished during the 1960's, reorganization plans regarding the environment and resources suffer from the transcending nature of the subject matter. Every department of government, and every committee of the Congress, has a considerable stake in and impact upon these questions.

One hesitates to endorse the status quo in the patchwork quilt of committee jurisdictions, but the illustrative cases discussed in this paper imply some advantages in the very decentralization of the congressional system. Foremost among these is the capacity of Congress, with many committees engaged and a host of interested participants, to generate issues requiring governmental action. In some re-

[12]In particular, see *Material Needs and the Environment Today and Tomorrow*, Final Report of the National Commission on Materials Policy, June 1973, especially chapter 6, "Environmental Factors in Materials Policy" and chapter 9, "International Aspects of Materials Policy". Also *Resource Conservation, Resource Recovery, and Solid Waste Disposal*, studies prepared for the Committee on Public Works, U.S. Senate, by the Environmental Policy Division of the Congressional Research Service, 93rd Congress, 1st Ses., November, 1973.

[13]A general overview of some of the problems connected with attempts to reorganize the congressional committees is contained in *Changing Congress: The Committee System*, Annals of the American Academy of Political and Social Science, (V. 411), January 1974. See particularly the introductory essays by Congressman Richard Bolling, "Committees in the House", pp. 1–14, and Senator Bill Brock, "Committees in the Senate", pp. 15–26. Regarding late developments in the House of Representatives committee system, see *Committee Reform Amendments of 1974*, Staff Report of the Select Committee on Committees, U.S. House of Representatives, 93rd Congress, 2nd. Ses.

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spects, congressional antennae are more sensitive to the types of questions which might be lost in the cumbersome processes of the bureaucracy—or in an excessively concentrated legislative committee system. This capacity is purchased at some cost in duplication and coherency, as legislative subcommittees grapple with individual facets of a complicated whole. But the fact is that no one in either branch of government has yet formed a valid conception of this whole; it may not be possible to do so. As reformers learn time and again, what is most lacking is not the instruments of policy, but the wisdom of policy.

Congress could improve its performance in these fields by employing an option which is rarely invoked: the device of joint referral of key proposals to more than one committee. Occasionally, the Senate has routed bills to committees with intersecting jurisdictions, and from time to time joint or duplicate hearings have been conducted, sometimes without formal referral. The Armed Services Committee, for example, joined the Foreign Relations Committee to review the Limited Nuclear Test Ban Treaty of 1963; the Joint Committee on Atomic Energy also inquired into aspects of the accord. In several instances, Armed Services has teamed up with Appropriations to hold hearings on such matters as the Anti-Ballistic Missile programs. On at least one occasion, the House and Senate Armed Services Committees combined forces to appraise the future plans for nuclear aircraft carriers through a specially constituted joint subcommittee.

Not surprisingly, there are impediments to such arrangements. Committees are generally wary of blurring their own identities. Given the incredibly hectic lives of committee leaders, the scheduling problem alone is intimidating. Nevertheless, since so many committees are now receiving proposals with far-reaching international consequences, Congress would do well to consider wider use of the joint referral mechanism. In order to increase chances that broad foreign policy perspectives are brought to bear on such multi-faceted issues, the Senate Foreign Relations and House Foreign Affairs Committees could undertake more frequently to comment upon international aspects of measures considered in other bodies. In some cases, formal referral to the foreign policy committees might be desirable, but even without such a procedure they might keep a discreet lookout for issues pending elsewhere on which they should offer views. Undoubtedly, they will wish to show a proper concern for their colleagues' sensitivities, and a necessary economy of effort will require them to be selective about which issues demand their separate attention. But to identify and illuminate the interdependencies at work in almost every realm of environmental and resource policy, the foreign policy committees could be immensely helpful if they chose to assert their interest across the widest feasible range of legislation and congressional oversight activities. Making allowance for the competitive political setting in which committees function, it is still possible to believe that constructive commentaries by an informed foreign policy committee can be useful to their associates in addressing certain issues primarily from a domestic point of view.

As sluggish as the congressional process may often be for dealing with environmental and resource problems, the experience reviewed here demonstrates that Congress does have the means to enforce and frequently to initiate affirmative measures in this area. The internal refinements now underway in the House and Senate promise to augment the legislature's capacity to orchestrate policy on issues falling across committee jurisdictions. In this field, no less than others, the results are bound to be mixed and uneven, but it is doubtful that any neat organizational changes could improve them markedly. The thesis here is that, contrary to the prevailing image of Congress as the temple of parochial politics, sound proposals to improve international cooperation on environment and resource matters will survive the gauntlet of legislative review, just as some of them have actually originated in the Congress. Certainly the inherently greater difficulty of persuading Congress to modify its historic pluralism in organization is a conclusive argument against devoting Herculean labors on this front. Improving executive organization will consume more than enough energy for some time, as will the continuing attempts to conceive and create international instruments appropriate to the need. In those causes, one surmises, Congress will prove a sympathetic partner.

Environmental and Resource Interdependencies: Reorganizing for the Evolution of International Regimes

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1. HOW WE ORGANIZE FOR PARTICIPATION IN INTERNATIONAL SCIENTIFIC PROGRAMS: THE SHORTCOMINGS OF FUNCTIONAL ECLECTICISM

No nation goes out of its way to propose the creation of international arrangements for jointly managing a resource: unilateral or bilateral methods are always preferred. Multilateral arrangements are considered only when it is recognized that a valued objective cannot be attained without them. The evolution of multilateral regimes for dealing with a scarce resource—whether this be money, clean air or water, fish, radio frequencies, or radiation safety—is thus a function of a general recognition that these goods cannot be obtained through institutionally "cheaper" arrangements. This means that no arrangement is concluded until such a recognition has occurred.

Functional Eclecticism

The United States today participates in a number of international regimes for the allocation of scarce scientific and technological resources: it is participating in a series of complex negotiations and programs designed to lead to the creation of additional ones. All illustrate the truism just stated. Tele-communications standards and radio frequencies, under ITU auspices, are gradually subjected to increasing multilateral regulation as new equipment suggests new needs. Monitoring of air and water characteristics becomes an internationally-coordinated activity under UNEP when a general concern over the deterioration of the environment becomes manifest. Coordination of R & D, under Organization for Economic Cooperation and Development (OECD), is recognized as being necessary in the field of energy resources only after oil shortages become painful. The cautious work of Food and Agricultural Organization (FAO) and World Health Organization (WHO) on the Codex Alimentarius suggests that the need for international pure food regulation is not yet fully recognized. Are we ready to trade national control over off-shore and seabed mining for unregulated rights of passage through straits? The international consideration of these separate issues suggests that the need for a comprehensive ocean regime is at least on the international agenda, though that "need" was not apparent until after diverse nations made competing claims for the same resource.

After the recognition of mutual need does emerge the regimes set up to satisfy them tend to become encapsulated in their specific tasks. They tend toward preoccupation with the technological, commercial and bureaucratic clients, interests, and characteristics which relate most immediately to the task. In short, the game is programmed *against* the possibility that new needs and possibilities implicit in the technologies being managed be permitted to emerge and be used for the greater benefit of all.

For better or for worse, the notion of "disjointed incrementalism" sums up all too accurately the process of organizing United States participation in international scientific and technological programs and management. Disjointed incrementalism has

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its good sides: it facilitates our understanding of how things now happen and it therefore enables officials to advocate and plan the survival of established programs and offices while occasionally permitting innovation and expansion. But these advantages also imply a number of shortcomings which, in our opinion, are sufficiently grave to justify the elaboration of a different approach to the organization of American efforts in the realm of the international management of science and technology.

Why Functional Eclecticism Is Not Good Enough

The criterion of the goodness of any mode of making decisions must be its ability to achieve a given political purpose. Lacking a purpose, decision-making machinery is bound to reflect the logic of incrementalism, i.e., of many fragmented purposes. If we take the purpose of U.S. policy to be the fashioning of global and national institutions capable of realizing collective interests of a long-term character, a very different strategy becomes necessary. These collective interests are unprecedented: they involve nothing short of fashioning institutions and rules capable of helping us to transcend "the global crisis" in which we find ourselves. Unlike past crises, the current need cannot be simply diagnosed and treated by building alliances, waging war, engaging in economic aid programs, furthering arms control, seeking to remove commercial and financial discrimination and building institutions for conflict management. Unlike past crises our current predicament is total. Everything determines and feeds on everything else, especially pursuits and objectives which are predominantly peaceful and have been associated in the past with the forward-looking and welfare-enhancing actions of states. The predicament is total because we can no longer simply liberalize trade rules, provide for global monetary reserves, seek to diversify energy sources, contribute to agricultural self-sufficiency in Asia, protect fish stocks threatened with extinction, survey the moon, sell nuclear reactors, mine the ocean bottom, provide for standardized automobile emission equipment, etc. . . . *without doing these things jointly and in full appreciation of their complex interactions and interdependencies.* Joint action implies that the substantive links among these separate issues be formally recognized in policy-making; and this suggests a form of bureaucratic organization different from the prevailing one. It calls for a different method of identifying the unit which is to be regulated or managed and for a capacity of conceiving and planning the management of the links. Moreover, such an approach calls for consultative and planning mechanisms which select and associate actors in a manner different from the issue-specific and interest-specific pattern which now prevails.

The incremental decision-making associated with functional eclecticism recognizes interdependencies without doing anything about them. As one short-term approach seemed to come to a natural end, because the issue area in question began to collide with another which suddenly revealed its dependence on the first, the incremental mode dictated an expansion of the concern and its merger with another. But we remained locked into a cognitive pattern in which we avoided a longer-term perspective which would have raised the question of what additional issue areas the now expanded one might meet, and how to prepare for the collision. This art of foresight involved presupposes that we have a wider notion of what the collective welfare demands, what ultimate notions of welfare are to be furthered. This calls for new criteria which would allow us to specify which combinations of two or more concerns seem appropriate.

The current debate over the law of the sea illustrates this inherent failing of functional eclecticism though almost any other area of science/technology could be used to make the point. It shows that our cognitive attempts to deal with this bundle of issues have been marked by successive uncoordinated short steps, even though the ensemble to be dealt with implies that solutions adopted in one sector depend on solutions adopted in another in order to be effective. We sought successively to manage threatened fish stocks in in-shore waters and eventually elsewhere, only to collide with the nutritional objectives of developing countries. We attempted to safeguard the resources of our continental shelf only to find the tables turned on us in such a way that much of the world is in danger of becoming territorial sea. We needed larger tankers to carry more oil only to realize that the living resources of the sea can be endangered by these behemoths. We favor strong pollution controls but this objective can only be realized at the expense of the equally cherished principle of the freedom of the seas. Could not much of this have been anticipated and planned *jointly* if a less incremental mode of decision-making had been accepted, less dependent on issue-specific techniques and interests? We do not think that "ocean space" is an altogether acceptable unit for the construction of a regulatory regime and a focus for national and international organization. But we do think that if "ocean space" had been used earlier as an orienting concept the complex multifactor pattern of action and reaction, cause and effect, and feedback would have been realized before it was too late to head off the passionate

but issue-interest-specific negotiating positions we witnessed at Caracas, Venezuela.

Incrementalism favors interests which are able to articulate clear and immediate claims and groups who can demonstrate the link between these claims and the alleged national interest. In the ocean debate, fishermen, oceanographers, mining firms, the Navy, and those concerned with the balance of payments (in government and in the private sector) were recognized as interested parties. Environmentalists, nutritionists, and economic planners had to fight for recognition. Generally, only those involved with the *immediate* consequences of choices to be made are recognized as legitimate claimants. Those more concerned with the second and third-order consequences of the choices have to fight for recognition—and often fail. The result is that better informed and more comprehensive choices which could have been taken in anticipation of later (and usually unwanted) consequences have to wait for the next round of incrementally-informed functional expansion—when the damage is already done.

The piecemeal construction of more elaborate international regimes and programs inevitably results in the growth of undesirable redundancies. Some redundancies in administration are desirable: the simultaneous effort by different agencies to deal with the same problem has some of the characteristics of a fail-safe system. While we admit this we do not then come to the conclusion that *all* redundancies are helpful. Functional specialization is of course desirable for many purposes of efficient operation. It is also desirable when a given set of issues can be met best without politicizing it in the full sense of national and international controversy (as is now the case with the law of the sea). But it can be carried too far when it results in operations and activities which duplicate unnecessarily and which may even be incompatible. For instance, both FAO and WHO (and their cognates in governments) are concerned with the food-population-nutrition interface. Both sponsor research and both monitor local conditions relating to the nutritional aspects of health. More important still, both are concerned with the elaboration of agreed international standards of conduct and they do "coordinate" their activities in the form of joint committees and working parties. However, the fact remains that each approaches the interface within the set of its own goals. WHO is interested in limiting population while also working for higher life expectancies, i.e., contributing to population growth. FAO is interested in increasing the food supply and in encouraging the orderly distribution of food through regulating international commodity markets. These objectives are not wholly consistent within and between FAO and WHO. The research and monitoring done by each is subordinated to the special organizational purposes, not the common purpose of more adequately feeding a world population which is to be kept small. Would not a single system of research and/or monitoring remove some of the redundancy?[1]

II. SOME PRINCIPLES OF REORGANIZATION

When collective welfare is conceptualized in these comprehensive terms, functional eclecticism is soon shown to be its own worst enemy because it tends to over-functionalize. For the reasons given above, the bureaucratic unit created to deal with the perceived interdependency will attempt to keep under its purview all programs and activities which it considers to be linked to its mandate, whether or not such specialization advances the collective welfare. The problem, then, is how the *unit* to be monitored, studied, ruled or managed is to be defined.

We are under no illusion that institutions and policies that are appropriate to new settings of interdependence will emerge full-grown, like Athena from the head of Zeus. We know that the attainment of collective welfare objectives is likely to come about—if it comes about at all—on the basis of discrete steps, taken one at a time. What we plan to offer below is a *style of viewing* international technological and welfare interdependencies that is superior to the current approach, and which can serve as a road map on the basis of which more appropriate institutions and policies can be arrived at.

Which Unit is to be Regulated?

A few illustrations will make the point. Units to be managed more comprehensively are now defined either in spatial/physical terms or by virtue of their substantive/technological properties. Neither suffices for all purposes. Spatial definitions of the unit-to-be-regulated have been arrived at in the case of Outer Space, Antarctica, and possibly the oceans. Separate scientific-technological-commercial interests have been merged in single regimes which take physical space as their organizing frame. The same trend is now underway with respect to the weather and climate. Substantive-technological definitions have been adopted in the regimes for food, telecommunications, nuclear safety, and environmental protection. The putative energy regime being discussed now is similarly conceived, and the

[1]For extensive case material and theoretical comment on the foregoing argument see J. G. Ruggie and E. B. Haas (eds.), *International Responses to Technology*, International Organization (Summer 1975)

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same may be true of efforts to deal with the world population problem. We argue that this may be adequate for certain, but not for all, purposes.

Table 1 seeks to illustrate how various ways of looking at the regulation of ocean space may all be equally valid—depending on one's purpose for regulation. It makes the point that there are no "natural units" which "self-evidently" provide a focus for integrated and comprehensive regulation or management. Yet the manner and purpose of defining the unit tends to imply the kind of regime which will be adopted. Different functions, rules and governing bodies will be set up depending on whether we focus on the technologies associated with the "unit", on the immediate results associated with the application of the technologies, on the externalities likely to be produced by the technologies, on longer-range impacts associated with the activities, or on desirable organizational and decision-making forms we may wish to superimpose on the ensemble from the beginning. Each column seeks to illustrate the kinds of consequences and concerns likely to go along with each of the technologies of current interest. If "ocean space" is not a self-evidently natural unit for the construction of a regime, what is? We may want to build world government by pieces: in that case the oceans are a likely unit because of the opportunities illustrated in the last column. But if we wish to alleviate famine or stabilize the price of hard minerals, the items listed under "extra-national impacts" suggest that an ocean regime may not be the appropriate form of world organization. How can we transcend functional eclecticism?

Why Regulate?

As long as the purpose of policy is simply to acquire more information prior to action, a func-

TABLE 1.—ALTERNATIVE WAYS OF CONCEPTUALIZING OCEAN SPACE LINKAGES

Technology	*Immediate Results of Main Activity*	*Externalities + positive − negative*	*Extra-National Impact*	*Organizational Change/ Decision-Making*
Underwater Mining (oil, manganese, etc.)	increase production	increase pollution − disturb world price system − congestion of waterways − decrease ldc income − *increase supply + *increase self-sufficiency of industrial states +	claims for exclusive national jurisdiction; change world trade system	multinationals become more national; vertical integration with ldc's declines; more complex price negotiations
Shipbuilding, Merchant Shipping (containers, LASH, OBO, etc.)	construction of large ports increase traffic	increase pollution − danger of collisions − crowding − decrease shipping costs + improve	confusion of flag and ownership issue; taxation, wages, rates: who decides?	automated scheduling and integrated land/sea service; more concentrated multinational consortia and operations service +
Integrated fishing operations with electronic gear	increase catch diversify catch	deplete fish stocks − interfere with food chain − decrease ldc income/ employment − increase supply + diversify protein sources +	claims for exclusive national jurisdiction; special zones, quotas, gear rules	international stock management schemes; discriminatory regional rules; bilateral understandings
Marine Habitats, Parks, etc.	migration and travel construction	increase pollution − *slow urban growth +	whose nationality? territorial jurisdiction claims; tax controversies	intergovernmental negotiations for resolving conflicts and new rules
Oceanographic and Meteorological Research Equipment	increase information	better decisions on use of resources, weather, ecosystems + unequal access to data −	restriction on right to access; disputes over access to data obtained	multinational coordinated research; research by ICSU organs and/or international organizations
Nuclear Submarines with MIRVs	increase in cruising and delivery capability	*stabilize bipolar deterrence + militarize most of oceans − speed nuclear proliferation −	innocent passage, access to straits, character of straits	efforts to restrict access and create nuclear-free zones; command/control devices not needing foreign facilities of access

*These externalities might well be rated negatively for LDC's

tionally-specific, physically defined and reasonably self-contained arrangement is appropriate. It makes sense that U.N. Environmental Programme (UNEP) should be responsible for monitoring the environment and that the International Atomic Energy Agency (IAEA) should sponsor research on reactor safety. Likewise, at the national level, it makes sense to permit the various specialized bodies already in existence to engage in similar activities. Information gathering is a highly professionalized process depending almost entirely on scientific expertise. The dominance of physical or technical criteria and characteristics is therefore appropriate, including the definition of what is to be studied and/or monitored. It is true that the act of acquiring information tends to foreclose options with respect to choice later in the process. So it must be. There is no alternative once we admit that the problems caused by science and technology (as practiced in the past) can only be solved with the help of science and technology (as practiced in the future). We consider this concession to "technique" preferable to the alternative of permitting ill-informed and short-run political, commercial and military objectives to limit the scope of research and monitoring.

Functional specialization and disaggregated task performance in national and international bodies are no longer acceptable, however, once management or regulatory action involving the collective allocation of resources is to be legislated. Once research has resulted in the identification of a complexly-linked nexus of issues and relationships, units defined in spatial and substantive terms are no longer helpful or viable in determining how and where to organize activities. Separate legislation for food, the oceans, population, pollution, and energy will lead to disjointed management which ignores the feedback loops and trade-offs between the activities and interdependencies subsumed by each unit. The collective allocation of resources calls for political choices, for the ordering of priorities, for the creation of a future-oriented consensus. Hence, it makes more sense, once this need arises, for the Department of State (and the U.N.) to create a "Bureau of Resource Allocation" than separate agencies to deal with food, the oceans, population, pollution, and energy. Specialized scientific and technical inputs are necessary for such choices to be effective, but they cannot dictate what those choices will or should be.

In sum, once we admit that physical/spatial or substantive/technological definitions of issues are not equally acceptable for all purposes, it becomes necessary to develop a different set of criteria on the basis of which to conceive of problem areas and organize activities. This set of criteria should facilitate three things: (1) It should tell us when and how to *couple* what substantive issues so as to make collective legislation for an entire bundle of substantive concerns possible; (2) It should tell us when and how to *decouple* what functions performed in the service of such collective objectives; and (3) It should do so by specifying a proper mix between political choice and expert judgment so that, in (1) not everything is determined on the basis of short-term quid pro quo calculations and, in (2) the fragmentation and encapsulation of functional task performance is not repeated. As a set of general principles, then, the coupling of decision-making should be informed by scientific and technical knowledge, while the decoupling of task performance should be ordered by a hierarchy of purposes derived from that aggregation of decision-making. Furthermore, since we cannot know what future developments in knowledge will be, and since there now exists no clear political consensus concerning future needs, the institutional arrangements now constructed should make it possible for policy and regimes to "grow into" new tasks *as* new collective interests and interdependencies come to be recognized and acted upon.

Our ability to do any of this rests upon, as already stated, our developing a definition of the "issues" or "units" of concern to collective management, in terms other than their physical/spatial or substantive/technological characteristics. As a first step we propose to have a look at the activities international regimes perform, in response to environmental and resource interdependencies.

Reconceptualizing Present Forms

Before going further we must establish a convention on the use of the key terms which will dominate our discussion from this point on: task, function, purpose. The word "task" will be made to refer to the kinds of activity performed by an international regime, such as the following. All regimes coordinate activities, constrain unilateral volition, specify a set of norms for the behavior of members, make plans, provide a service, have mechanisms for the resolution of differences—these tasks inhere in the very notion of "collectivity" or "regime." None of these terms differentiates adequately among the unique "functions" that different international regimes have. "Functions," to be described presently, provide the superordinate reasons as to *why* regimes perform these tasks. "Purposes" describe more ultimate objectives of states in having functions performed, such as various ways of defining and realizing collective welfare. The main "functions" of regimes are:

1. Problem Search and Definition. We are here think-

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ing of such activities as the environmental studies or science policy meetings of the OECD, and the basic research performed by or through any number of global agencies—Global Atmospheric Research Program (GARP) on weather, MAB on the relationship between man and the biosphere, LEPOR on oceanography, UNEP on derived working limits and pollutant pathways, WHO-IAEA on the health hazards of irradiated products, etc. Whether in the social or natural sciences, the purpose of these regimes is to conduct studies for the acquisition of basic knowledge about the characteristics of systems, and to search for and define emerging problems (and possibilities) within them.

2. *Harmonization/Standardization of National Responses.* In areas in which problems and/or possibilities have already been defined we would expect, in the first instance, national attempts at regulation/exploitation. Yet, in attempting to carry out such activities, countries may discover that they are "bumping into" one another. It may be decided that rules of the road are necessary or that a division of labor makes sense. Contemporary illustrations of this phenomenon include weather observation through the World Weather Watch (WWW), environmental monitoring through UNEP, oceanographic monitoring through IGOSS, as well as equipment standardization and performance harmonization in civil aviation (ICAO), shipbuilding (IMCO) and the use of uniform telecommunications equipment (ITU). In each case the activities themselves remain national. The purpose of the regimes is to so arrange the confluence of national responses (to problems or possibilities) that, in their collective manifestations, they make it possible for all interested actors to attain their common objectives.

3. *Defining Property Rights.* As developments in science and technology have made the international commons exploitable, the question of defining national/international and private/public property rights has become a pressing concern. This is now the case with the frequency spectrum, the seabed and ocean space, and will soon be so with respect to the climate and perhaps outer space. The purpose of such regimes as may be established is to delimit rights of access and exploitation.

4. *Collective Elaboration of Welfare Choices.* All regimes are predicated upon the definition of a purpose, but in virtually all cases the purpose of the collectivity is subordinated to the disparate purposes of national policy. As environmental and resource interdependencies become more severe, however, one might expect the emergence of regimes in which the disparate purposes of national policies are redefined in terms of the larger collectivity. Some modest instances of this may be found in, for example, the attempt to control the use of nuclear technologies and materials by means of international safeguarding, and in such limited environmental standards as have been agreed to. At the Bucharest Population Conference reproductive habits in the Third World were added for consideration, and at the Rome Food Conference the feeding of livestock in the advanced countries joined the list too—without consequence thus far in either case. If the notions of the "finiteness" or the "outer limits" of the carrying capacity of the planet have any validity, however, one would expect to see more such efforts at collective choice to emerge. The function of the regimes subsequently created would be to calculate the trade-offs among different national activities when not all can be pursued, and the collective allocation of resources among societies in accordance with such trade-offs. This function involves "management" in the sense of ongoing allocational choices.

As already suggested, the existing pattern of organization and decision-making, both domestic and international, results in the virtual isolation from one another of these four basic types of regimes. Each has associated with it its own type of client and each is governed by its own type of actor. Furthermore, within each of the four, further isolation is guaranteed by the spatial/physical and substantive/technological differentiation of regimes. The attempt to forge a systematic relationship among regimes performing similar tasks in different substantive areas is difficult, and among regimes performing altogether different tasks almost impossible—witness the problems domestic and international environmental agencies are having.

Nevertheless, having reconceptualized the tasks regimes presently perform makes it possible to indicate how those tasks might be coupled. But this depends on the acceptance of "purposes" for action beyond the performance of functions. These become more sweeping and interdependent as we move from Type 1 to Type 4.

The Context of Regimes

If we examine the circumstances under which regimes of each of the four functional types have, in the past, emerged, an obvious principle of organization stands out: they are a response to the type and degree of enmeshment or interdependence of policy among the countries concerned.

In the case of regime-type 1, it is usually not necessary to pursue problem search and definition internationally, although there may be good (financial, symbolic, ulterior) reasons for wanting to do so in particular circumstances. Furthermore, the impact of the product of the regime on the domestic

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realm of members is not automatic. Before there will be such an impact a domestic actor has to seek to make use of the product (if, for example, it is scientific knowledge) or otherwise introduce it into the domestic policy domain (if, for example, it is a set of findings about the comparative advantages of different R & D strategies).

With respect to regime-type 2, the opportunity costs of not harmonizing or standardizing equipment or performance internationally may be very high, either in a monetary sense or because interference, inefficiency of operation or even disaster may result. Furthermore, the link between the regime and the domestic realm is more direct, for a set of rules for harmonization/standardization may mean profit or loss for a domestic industry or political ascent or decline for a domestic agency.

As for regime-type 3, the attempt to unilaterally define international property rights will lead to retaliatory acts by others, the consequences of which cannot be predicted by anyone. The chances are that it would lead to short-term gains for the most powerful but long-term losses for all. Hence, the international regime is a response to such constraints and contingencies. Furthermore, the link between the output of the regime and the domestic domain is direct, for what becomes international property can no longer be national property, and the number of domestic actors affected is likely to be high.

Lastly, with the case of regime-type 4, the realm of domestic behavior or domestic life-styles of others is reached. What a society can or should do domestically is the issue at stake—whether it concerns the domestic use of a technology, modes of industrial or agricultural production, waste disposal or land use, reproduction, or consumption habits. The interdependence of many kinds of policies becomes complete.

As suggested above, we are likely to reach this fourth level as "the outer limits" of systems are approached. If and as we do, and if and as intersectoral and inter-societal trade-offs become necessary, then a legitimate hierarchy of purposes clearly emerges, which allows us to conceptually and institutionally subordinate the four types of regimes, one to the other. The fourth would, of course, be in the dominant position, and the remainder successively subordinated to it. But even if the fourth level is not reached, there are clear instances in which superordinate-subordinate relations *now* exist among regime purposes and/or in which we can expect such relations to *emerge* over the course of the next few years. How can we know that? By looking at these regime types as being ordered on an ascending scale of politically recognized interdependencies. The basis for conceptual and institutional aggregation, then, is existing and anticipated policy interdependencies.

III. ORGANIZING FOR THE EVOLUTION OF REGIMES

We have described in ascending order of complexity the various functions and tasks which collective arrangements in the fields of science and technology carry out. The guiding principle of the order is the extent to which the activities of nations become enmeshed in one another as each nation seeks to maximize the physical and social welfare of its own citizens. And the criterion of complexity is the extent to which inter-sectoral and inter-societal trade-offs become necessary and the creation of hierarchies of purposes for collective arrangements is called for as a result. We do not wish to deny that ultimately everything is probably dependent on everything else, cognitively and practically. Macrosystemic attempts to understand linkages, to model and to simulate them, are praiseworthy heuristic exercises. The efforts of the Club of Rome in pushing us toward international planning at a very comprehensive level focuses concern upon the overarching purpose of making and keeping the planet habitable. However, such efforts do not provide a viable basis for the design of international regimes. Our understanding of the linkages remains fragmentary. Differences over the sharing of benefits and dangers will always exist. Tasks and functions cannot be performed or rearranged unless there is some semblance of consensus on the horizon regarding the meshing of purposes, even in the absence of definitive agreement. Lastly, the generation of global responses to global problems need not necessarily take the form of global institutions at all. We, therefore, take as our point of departure some likely areas within which the meshing of purposes is beginning to take place, and propose the rearrangement of tasks and functions on the basis of emerging policy interdependencies.

A depiction of *existing* regimes will suggest how to put these general principles of organization to work in the design of *future* regimes.

Existing Regimes

The major instances of existing international regimes in the fields of science and technology are summarized in Table 2. As the demonstration there makes clear, a regime need not be lodged in a single international organization, or indeed in *any* international organization. Typically, the existing regimes involve several international organizations, some at the regional and others at the global level. At the same time, there exists a considerable number of bilateral and multilateral regimes in which transgovernmental mechanisms, such as joint consultation, take the place of formal organi-

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zations. Three other patterns also appear which must be noted.

First, the tendency toward "functional eclecticism," which we have already described and criticized in general, reappears here in concrete form, and the problems attending this mode of management, too, can be demonstrated more concretely. Physical/spatial and substantive/technological definitions of the "area" of international interdependence now delimit regimes: environment, oceans, food, energy, mineral resources, and so forth. Note, however, the *actual* relationships among the regimes so defined: (1) Moving horizontally, from left to right, from one regime-type to another which incorporates more elaborate joint purposes, the original conception of the "area" of interdependence has progressively less to do with what really makes regimes hang together. For instance, the extent to which actual fisheries *management* is beginning to emerge is due to recognized interdependencies in employment, trade, and nutrition policy—not in "the oceans." (2) Attempting to move, horizontally, from right to left, in the coherent execution of tasks, is problematical since the relationship among regimes and organizations is often either random or does not exist at all. Functional autonomy seems to prevail. (3) Lastly, there is now no coordination worth mentioning among regimes within the same regime-type (columns): the proliferation of problem recognition and observational activities, as an illustration, speaks for itself.

Second, there exist two distinct clusters of regimes, those adopted by market economy advanced industrial countries and those which attempt to link them to LDC's. Two partial sets of exceptions might be mentioned. The Soviet bloc maintains its own regional arrangements for regionally recognized interdependencies and participates only marginally in the global ones. And there is a tendency emerging among LDC's to attempt their own approaches and arrangements, although it is not yet clear how lasting these efforts will be or what form they will take.[2]

Third, and to the surprise of no one, the making of collective welfare choices internationally is rudimentary at this time. It is barely beginning to take shape in the case of food allocation and fisheries management, while in the case of environmental standards, a notable difference of commitment exists between the global and regional (North Atlantic) levels (with the exception of IMCO conventions on marine pollution). To a limited degree, such choices are being made in the public health field. To the extent that collective welfare choices are beginning to be made, however, *they result from one or another of two superordinate purposes: the global redistribution of income, goods, and services (from North to South); and the improvement of the quality of life by controlling those characteristics of science and technology which undermine it.* Obviously there exists no agreement on either of these. Yet, by more fully elaborating these two superordinate concerns and by incorporating the lessons learned from the study of existing regimes, it is possible to sketch out some policy areas within which negotiations are beginning to take place and to offer some frameworks for the design of relevant future regimes within which hierarchies of purposes can emerge.

Future Regimes: What to Couple with What

The two superordinate concerns which now are beginning to cut across virtually all existing regimes both involve many sectors of science and technology. Both are inextricably involved with the world economic system. Both involve all four regime-types at this time. What, then, should be linked with what? Our proposals are based upon two general rules. First, those functions and activities should be linked which are now seen, or soon will be seen, as being related *in the pursuit of a common purpose.* Second, "to link" does *not* necessarily imply immediate institutional restructuring. Where common purposes are slow to emerge, it makes sense to design international institutions in such a way as to facilitate more rapid problem recognition and cognitive linking among different policy bundles. These cognitive frames can become designs for the organization of programs and activities as common purposes come to be discovered and defined.

Thus, by examining the patterns of policy interdependencies which are beginning to be recognized, it is possible to specify four distinct clusters of future functions and tasks:

IMPROVING THE QUALITY OF LIFE (REGIME A)

We propose that those nations now recognizing, or on the threshold of recognizing, that the improvement of the quality of life involves potentially sharp changes in the pattern of industrial-/economic growth, consumption of energy, use of raw materials, urbanization, transport, innovation and decision-making—but in a setting in which population growth is no longer a problem —set their own pace with respect to the tasks of coordination, constraining unilateral action,

[2]Worth citing, in this connection, is the recent "Cocoyoc Declaration," adopted by participants in the UNEP/UNCTAD *Symposium on 'Patterns of Resource Use, Environment and Development Strategies,'* Cocoyoc, Mexico, October 8–12, 1974.

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TABLE 2.—EXISTING REGIMES

	Regime Types Functions carried out by:				
Internationally recognized interdependence "area"	*Problem Recognition and Research (1)*	*Standardization, Measurement, Observation (2)*	*Property Delimitation (3)*	*Collective Welfare Choices (4)*	*Other Regimes Being Discussed*
Environment	UNEP, OECD, EC, IMCO, IOC, SCOPE, SCOR, UNESCO (MAB), ICAO	UNEP, IMCO	OECD, EC, IUCM, IMCO, ICAO	Marine pollution standards (global); european regional standards (for a few pollutants)	LDC's splitting from UNEP into HABITAT
Food (incl. fish)	FAO, WHO, NGO's foundations fisheries comm.	FAO, WHO fisheries comm.	Commodity agreements: fisheries comm.	Fish (by species and regions); surplus disposal rules; marketing some commodities	Decentralized world food reserve and allocation tied to productivity program
Energy	OECD, EC, NGO's foundations	EC	OPEC	Oil production	Importers' arrangements tied to monetary policy
Mineral resources (non-energy) and Water	UNESCO (IHD) foundations	ICSU	none	no	Exporters' discussing cartels
Population	UN, WHO, NGO's foundations	UN, WHO	none	no	—
Nuclear Energy	IAEA, EC	IAEA, EC	none	Nuclear materials safeguarding	Trend toward merger of two regimes
Public Health	WHO, IAEA, FAO	WHO, IAEA	WHO/FAO	Radiation safety standards; Codex Alimentarius; International Pharmacopeia; epidemic control	no
Telecommunications	ITU, INTELSAT, UN, COSPAR	COSPAR	ITU, INTELSAT, UN	Uses of outer space	Resource satellites
Oceans	UN, IMCO, UNCTAD, UNEP, FAO, ITU, ICSU, IOC	UNEP, IMCO, ITU	IMCO	None since a breakdown of Geneva regime	LOS discussions now
Weather, climate	WMO, ICSU	WMO	none	no	Rules for permissible experiments
Application of S/T to economic and social development	UN, UNESCO, UNIDO, IAEA, OAS, OAU, IBRD	none	none	no	LDC discussion in terms of protecting *national* rights to access and exclusion
Pure research	CERN, UNESCO, ICSU	none	none	no	
Social-economic planning	UN, ILO, OECD, IBRD	UN, ILO, OECD	none	no	Using UN research centers for evaluation of DD2
Global trade and economic development	UNCTAD, IBRD, FAO, GATT, OECD	UNCTAD	UNCTAD, GATT	no	Using UNCTAD to link to commodity trade
Global trade and money	IMF, UNCTAD, EC, OECD	IMF	IMF, EC	Special drawing rights	Link to commodity and fuel trade

specifying norms of behavior, and providing common services. In short, we propose that the OECD countries focus their attention on OECD as the forum for jointly making collective welfare

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choices, for managing the set of interdependencies captured by the environment/energy/-growth/trade/money nexus. In so doing, they will keep their effort separate from similar interests in the Soviet bloc, but the U.N. Economic Commission for Europe might renew its tarnished lease on life if it can serve as the link between the Western and the Eastern blocs of the North. The effort of the OECD countries will thus be regional in nature. It may set the eventual pace of the LDC's, but it should not wait for them.

Speaking in functional terms, this regime would be of Type 4; it would make management and allocational choices. It would properly subsume and include the problem-recognition function already carried out by OECD. It should acquire those functions of harmonization and standardization which contribute centrally to the success of management but which are now dispersed among various agencies. However, such coupling need not be carried to the point of actually merging other regional agencies with OECD. The work of the European Space Organization, for instance, is properly self-contained, as is the European Center for Nuclear Research's (CERN). As long as these tasks are performed within the context of a regional management concept, the execution of the specialized functions can be left separate.

GLOBAL ENVIRONMENT (REGIME B)

Global environmental concerns are not now susceptible to collective allocational choices because of the sharp division of opinion of whether the costs of management will penalize the economic development of the LDC's. However, the opportunity is at hand for the more systematic scientific and political discussion and investigation of the issue, provided the redistributional aspect and its trade/money manifestations are explicitly linked to the effort. Hence we propose a U.N. regime for the environment which includes these social and economic dimensions. The function would not be of the management type *now*, though the regime should be so built as not to foreclose its evolution. It is also too early to speak of defining an international commons. However, it is not too soon to so construct the research, standardization, and harmonization functions as to facilitate progress toward the redefinition of property rights. Some of the institutional consequences of this suggestion would be the merging of certain activities of FAO, WHO, UNDP and IBRD with those of UNEP.

FOOD AND POPULATION (REGIME C)

Global redistribution and/or development is clearly related to population growth, and to the adequacy of local agricultural production and the existence of an equitable agricultural commodity trading system. It is also dependent on the ability of LDC's to earn from trade the foreign exchange needed to finance commodity, energy and fertilizer imports. Agricultural productivity seems closely intertwined with overall economic and social changes, including industrialization and urbanization. Thus, systematic efforts to spur the application of new and old technologies to economic development closely interact (directly and indirectly) with food and population policy. Hence we propose that these links be overtly recognized in international programs to (a) deal with food shortages, (b) stabilize commodity prices and supplies, (c) apply science and technology to development and (d) deal with population growth. This means that *separate* international programs for diffusing technology (UNESCO, ACAST, IAEA, UNIDO), controlling population (WHO), increasing agricultural productivity (IBRD, UNDP, FAO), dealing with stocks and surpluses (fisheries commissions, FAO, WFP) are worse than useless: they are mutually self-defeating.

It is probably not possible to speak of redefining property rights in this area in the absence of prior agreement on a management concept, with the possible exception of the weather and climate. It is probably also too soon to elaborate such a concept now. Hence the work of the regime should lead to the faciliation of efforts which would result in the formulation of such a concept in the not too distant future. Problem recognition and harmonization of policies, carried out now under the auspices of many agencies and programs, can then be combined or left separate, depending on the direct dependence of the allocational choices on such services. Again, not *everything* relating to food, population, commodity trade, and SDR's requires centralization.

ENERGY AND MINERALS (REGIME D)

A third U.N. regime would address the redistributional issue evoked by world energy supplies and prices, the search for alternative energy sources and its potentially disruptive impact on the growth of LDC's, the trade-offs to be worked out between trade concessions the North offers the South in exchange for the stabilization of non-agricultural commodity markets. This also involves the use of technology for development and resource planning, and an equitable compromise between the rapid introduction of new technologies (e.g., earth resource satellites and sea-

bed mining equipment) and the protection of established markets for raw materials exporters. This regime would also include the matter of when, how and under what safeguards nuclear reactors should be installed in the search for new energy sources.

This exercise in regrouping international regimes has deliberately omitted those functions and activities which need not be regrouped in order to achieve superordinate purposes.[3] Many of the activities relating to pure research, to telecommunications, and to public health have little inherent rapport with these purposes. Hence there is no reason to disturb their functional specialization and character. We are thus left with a residual category of existing regimes, of all four functional types, which ought to be serviced in much the same fashion as in the past. This is true notably of the epidemic control activities of WHO, the meteorological intelligence of WMO, the aircraft safety standardization of ICAO and the telecommunications policies of ITU. However, this is not to say that the implications and findings of these self-contained functions should not be *utilized* in the more holistic approaches of the major regimes proposed.

Moreover, there are some functions and activities which are now in the process of being coupled which should probably be *decoupled.* Most important are the efforts which are now tending toward the creation of new "international commons," legal arrangements which would eliminate or restrict national (and private) property rights in favor of international (and public) authorities. The oceans debate illustrates our point. The point of the negotiations is to create a new commons while preserving an old one, by limiting the transformation of large parts of the seas from a public into a set of private goods. As such, however, it couples a set of aims, pursuits and technologies which ought *not* to be coupled. The significance of fisheries management, as already noted, is due to its links with employment, trade, and nutrition—not the water. The importance of manganese and oil relates to industrial activity, trade and monetary policy—not the water. The same is true for shipping, marine pollution, and underwater cables. Subjecting the oceans to a multi-purpose regime aggregates according to a faulty principle and may result in an irrelevant commons.

If there *were* agreement today on the overarching links between ocean resources, development and trade, the proper management principle would be the incorporation of ocean-related economic activities in a global development program, not in a comprehensive International Seabed Authority. In the absence of such an agreement it makes much more sense to keep these concerns decoupled, under the aegis of several authorities and regimes and to create a Seabed Authority with restricted powers, in the hope that disaggregation now would permit reaggregation at some future time. Premature aggregation is likely to call into being bureaucratic and commercial interests organized around the "wrong" focus, but becoming so strong as to prohibit reorganization later. Much the same case can be made for the weather and climate in the context of discussions leading toward the creation of an international commons for the atmosphere.

This poses the more general issue of where, on principle, decoupling can and should take place.

Future Regimes: Where to Decouple

Some functions must go along with superordinate purposes but many need not. If they can be made to serve many purposes and if they do not uniquely serve the programs and organizations in which they are now found, there is no need to keep them there. Why should MAB be in UNESCO? Or UNISIST? Must LEPOP be in the U.N. system at all instead of being coordinated by ICSU? Why must FAO do its own work on plant genetics? Thus, for those instances in which a superordinate purpose does *not* exist, and for which we have *not* proposed an overarching regime, we suggest the following organization:

PROBLEM RECOGNITION AND RESEARCH

We do not think that the reasons for centralizing problem recognition and research functions in the United Nations are very persuasive. Problem-recognition is primordially the task of experts who are already organized into a complex international network of nongovernmental organizations, working groups, and invisible colleges. We believe that problem-recognition in the context of environmental and resource interdependencies can be best handled by the following mechanisms:

(1) A network of international systems analysis institutes staffed by specialists from the natural and the social sciences, whose work could be made available regularly to the operating regimes and institutions of the global and regional systems. These institutions would of course respond to requests for certain kinds of investigations which may be made by the political and coordinating organs of the regimes. Such a network could take the place of similar operations in the OECD and in such U.N.-affiliated bodies as UNRLSD, the U.N. Institute for Training and Research (UNITAR), and the Center

[3]In this discussion we have drawn upon suggestions contained in a confidential memorandum of the Dag Hammarskjöld Foundation (Taljöviken discussion paper no. 5, November, 1974).

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for Programming. The International Institute for Applied Systems Analysis in Vienna is one possible model.

(2) Problem-recognition activities which are specific to the concerns of the major regimes (food, commodity trade, mineral depletion, and energy consumption) should be linked more tightly to the decision-making bodies and fora associated with the regimes, but need not therefore be centralized bureaucratically within them. In fact, such activities as are now carried out within FAO and WHO, for instance, might well be removed from them because of their tendency toward over-specificity. The research connected with them could be delegated to national institutions supervised by appropriate working parties or committees of ICSU, or of international professional associations. This mode of organization is illustrated by GESAMP. Large-scale internationally coordinated research projects, such as MAB and LEPOR, need not be associated with a specific international organization. Both serve as problem-defining and problem-mapping operations necessary *before* consideration can be given to the creation of new international commons arrangements for the protection of the biosphere, so that their results should be reported to the Global Environment Regime. Their work can be coordinated by ICSU and the IUCN, however.

(3) International information systems (e.g., UNISIST and IRS) should be organized by ICSU and put at the disposal of national and international operating agencies.

HARMONIZING AND STANDARDIZING

Many activities related to harmonizing national practices (in monitoring, aviation, shipping) are specific to one or more of our regimes. Many more are properly specific to the minor regimes which have a low enmeshment potential with respect to collective welfare purposes. For example, ITU, WHO and WMO activities in this realm, already largely decentralized to their national and professional components, should be left as they are. In other instances, such as satellite exploration and development, what is needed are "right-of-way" rules which enable each interested party to conduct experiments without infringing on the rights of others. For the proper functioning of our energy/food/mineral regimes, what matters is the *information* about weather, soil erosion, and mineral deposits that these satellites produce; the *activity* itself can be carried out autonomously.

This, however, is not true for all such activities. Environmental monitoring which involves specific measurements at designated spots, or observations concerning energy usage or food production may call for closer integration into one or the other of the major regimes. This would entail the standardization of practices and the harmonization of equipment and procedures specific to an agreed international task. While the actual operations could still be decentralized nationally and/or regionally, the instructions governing the operations should be centralized. The WWW is one model we have in mind. A similar model may be appropriate for the coordination of national food reserves policies under Regime C.

PROPERTY RIGHTS

What, then, about the function of considering and creating new property rights? This shades closely into the comprehensive allocational choices and is often part and parcel of such choices, as in the Law of the Sea negotiations. We are impressed by the harm which can be done by premature definitions of international commons, premature because the trade-offs between rival purposes and aims have not been properly calculated and negotiated. We therefore urge that this function *not* be attempted comprehensively in the absence of explicit debate about superordinate purposes. Such debates could be enhanced by the provision, in the proposed international systems institutes, of special "look out" staffs whose job it will be to do the necessary intellectual reconnaisance of the costs and benefits of alternative definitions of property rights. No special regime is required for this.

Centralized Confrontation and Decentralized Action

In offering these suggestions for the organization of international regimes, we explicitly acknowledge and accept two sources of tension which are inherent to the enterprise. The first is the ever-present contradiction between the need of states to respond collectively to problems and opportunities that developments in science and technology pose, and their desire to maintain national autonomy and flexibility in so doing. The second is the pull between scientific choices, which are heavily informed by consensual knowledge of cause/effect relations, and political choices, which are heavily informed by normative purposes and negotiated priorities. Rather than avoiding these two sources of tension, we have deliberately incorporated them into our proposals.

It is obvious that any attempt to couple international activities which have grown up separately as a result of functional eclecticism will trigger controversy as to priorities. It forces a confrontation of national purposes which are now at loggerheads. It leads to collective political choices. Political choices

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(and non-choices) are by definition holistic: they call for or result in the decision to take away resources from some sectors or some actors in order to bestow them upon others; they are also holistic because in shifting resources decision-makers perforce work out priorities as to which aspect of the collective welfare they wish to stress or slight, which purpose to further or to constrain. We thus accept that fundamental allocative choices are political choices. We further accept that in a growing number of instances they need to be made collectively.

At the same time, we have sought to focus this collective politicization by two means. We have, first of all, distinguished between the need to make collective decisions in certain areas from the institutions through which collective actions are carried out. Our motto here has been "centralized confrontation and decentralized action," referring to permanent discussions and negotiations as to which regime is to get what resources, together with flexible strategies of implementation. And we have further focussed the confrontational aspect on the redistributional and environmental domains since they attract more shared interest than any others which might be suggested. Our aim has been to make sure that separate sectors are discussed jointly, and that in the process of bargaining priorities for action emerge. Once done, however, the actual implementation of programs need not be centralized bureaucratically. Thus, centralization of decision-making increases politicization because it forces the confrontation of dissimilar objectives; decentralization of action, involving scientific knowledge and technological constraints, permits a subsequent lessening of controversy.

Second, we have sought to so construct the problem-recognition and standardization functions as to highlight the need for scientific knowledge in making more holistic political choices. Scientific knowledge will never be a final or conclusive basis for political choices. But, at the same time, scientific knowledge can elucidate political purposes and facilitate those choices, and thereby ultimately remove issues from *uninformed* confrontation. Thus, we have deliberately suggested the mingling of knowledge and purposes, of scientists and their networks with the more political interests which now dominate decision-making.

Will such a cognitive reordering not simply raise to the level of intensive international political controversy some matters still modestly flowering within the shelter of technocratic and transgovernmental decision-making processes? The cognitive reordering is already well launched. The intensive international political controversy over the already linked issues of resources, environmental protection, re-allocation and the management of technology is a patent fact of life. There is no way of interpreting the epochal international conferences since the 1974 Special Session of the General Assembly except as the opening rounds in a long bout over the reallocation of everything valued. In this long bout, the United States has become the leader of the opposition, as Daniel P. Moynihan so aptly put it.[4] Disregarding some of the maxims of innovative regime construction that we suggested has been one of the reasons why so little progress was made at the Law of the Sea Conference. Certainly, by adopting the perspective we have urged, political controversy is not going to decline in the foreseeable future. On the contrary, as more issues are discussed jointly, the stakes will rise for the "tyrannical majority" and the not-so-loyal "opposition." Their mutual interdependencies, however, will not wither away. And so a new set of rules of the international resource and welfare game will painfully evolve. We, like Moynihan, hope that new perspectives including that suggested above will make it possible for the United States to influence those rules in such a way as to enhance everyone's welfare.

[4]Daniel P. Moynihan, "The United States in Opposition", *Commentary* (March 1975).

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Environmental Concerns and International Conflict

Thomas C. Schelling
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Some activities that affect the environment cause environmental problems. Others just cause problems. The difference is mainly in whether or not the problems have "environmental solutions," and whether or not the issues they raise are essentially "environmental issues." The difference can also lie in whether or not the parties involved have a common perception of what the problem is and of whether or not it is "environmental."

An example may help to make the distinction. Aircraft noise or incinerator smoke is an "environmental problem" if the solution is to develop technologies that reduce or eliminate noise or smoke or replace aircraft or incinerators with electric trains and sanitary land fills. It is still substantially an "environmental problem" if the solution is to find aircraft routes and flight profiles that minimize the damage due to noise, and to situate incinerators in such a way, and to operate them at times in day and in types of weather, that minimize the harm due to smoke. But if the "solution" is to relocate people who live near the airport or who live downwind from the incinerator, the problem becomes transformed from an environmental one to a land-use problem, a zoning problem, a people-moving problem, a community development problem. Similarly, if it is decided that the most economical "solution" is to let the airplanes go on flying and the incinerators go on burning, and to compensate the people whose health is affected or whose property values decline, the problem is one of damage assessment, property-rights identification, false claims, screening and testing, "due process," and finally, determining where the money should come from to pay the costs of compensation.

The point is not to quibble about the heading under which a problem or dispute should be filed, but rather to help in identifying the kind of governmental activity that will be involved in dealing with the issue or the dispute or the problem, in identifying who the main participants are likely to be in the search for a solution or a resolution of the issue, in identifying jurisdictional boundaries, and in thinking about the kinds of evidence and information, even research, and even the kinds of professional staff and other personnel, that will be engaged either in coping with the issue or problem or even in deciding whether or not there is an issue or problem to be coped with.

Drawing on our illustration of aircraft noise, the "environmental problem" would involve aircraft design, flight control, research in aerodynamics and propulsion, and probably coordination nationwide, or wider than that, because each individual aircraft utilizes a multitude of airports in different cities and even different countries. In the United States, this kind of solution would involve Federal agencies and the aircraft industry, as well as airlines and possibly airports. If the solution were to move people, or to pay compensation on the basis of validated damage claims, or to find a "package" arrangement that would provide enough advantage or amenity to the affected populations so that they would be collectively satisfied to go on living with the noise, the problem becomes local rather than federal, perhaps judicial rather than regulatory, the aircraft industry and the air-safety engineers are out of the picture, any research and development would involve the acoustics of school construction and such things, rather than aerodynamics, there would be little need for national coordination, except perhaps in the financing of the local solutions, and the whole process would be about as non-environmental as the insurance business. (If there are "environmental" problems in relocating people or coping with aircraft noise in the construction of buildings, it will still not be the kind of environmental problem that might be suggested by the aircraft technology that gave rise to the problem.)

As a preparatory illustration, before we get explicitly into international issues arising in the environment and some questions of how to organize the U.S. Government or other governmental bodies to cope with them, this aircraft-noise illustration

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has yet another interesting feature. That is that the precedents that may be established in the handling of the problem or the refusal to treat it as a problem, and the class of commitments that may appear to be incurred by proposing or acquiescing in a solution to a particular problem, will depend very much on whether or not the problem can be defined as "environmental" and kept in the realm of environmental issues, or becomes instead a matter of making or financing compensatory changes for those who are adversely affected, acknowledging rights to compensation, and so forth. If people successfully claim compensation for plaster ceilings shaken loose by the roar of aircraft, the principle may be extended to the rumbling of buses and trucks on the nearby streets; if the solution is to redesign propeller blades or jet exhausts, the truck and bus companies may be unaffected. Similarly, the redesign of jet exhausts never involves identifying damaged individuals or even acknowledging that any individual could claim or prove damage, while other kinds of solutions will almost always involve direct identification of communities, population groups, or even individuals.

The implication of all these obligations is that the organizational forms and procedures, the legal issues and the precedents, the interest groups and the jurisdictions, and even the extent to which an environmental event or development is perceived as a problem to be solved instead of a dispute to be resolved, will often have much less to do with the environmental origin or technological background of the matter than with the kind of solution or resolution that is searched for. Indeed, just perceiving that this is the case may be a crucial element in any decision to treat certain kinds of "solutions" as out of bounds, and deliberately cultivating a jurisdictional incapacity for dealing with them. At the same time, if issues do arise that must be resolved in order to avoid either enormous obstacles to technical progress or grave harm to international relations, institutions that have been designed to cope with environmental problems by solving them as environmental problems may be simply of no help.

Environmental Problems and International Problems

What was said above by way of introduction suggests that what at first glance may often appear to be an "environmental problem" turns out, despite its environmental origin, to be a different kind of problem insofar as the solution is concerned, or a different issue insofar as its resolution is concerned. But things are even more complicated than that. Even where there is, in a stricter sense, a truly "environmental problem," one that is to be solved within the same context within which it arose, one that is directly attacked in an effort to eliminate it altogether as a problem, to ameliorate the environmental impact, to clean up or compensate or offset what it does within the medium in which it occurs, there will often still be an international problem that is a different one.

The simplest, but perhaps least important, kind of international problem will relate to who pays for solving the environmental problem. That problem is easiest if the solution is cheap, universal, nondiscriminatory, and uncontroversial. If the solution requires expensive actions taken within countries, but actions that can be taken by national governments, the sharing of costs will be more complicated than when money is to be merely contributed to some central international agency. When the costs are imposed not on governments but on farmers or manufacturers or tourists, and the costs fall very differently among countries, and the costs are very hard to estimate, and the costs are aggravated by other things that countries either do or do not do, disputes over the sharing of costs, especially if the costs are large, can be serious. And the problem will be even more complex when the configuration of costs is an inter-linked bilateral system—the cost to each country depending primarily on activities near common boundaries within adjacent countries.

More difficult still will be the environmental effects that are not perceived uniformly as "problems" at all. Changes in climate would be a good example. Any systematic changes in temperature, rainfall, cloudiness, or wind velocity, are likely to be perceived by some as a blessing and by others as a loss, even a danger. Even within the United States the only thing that keeps weather policy from being divisive between states and adjacent regions, as among different sectors of the population like farmers and sports enthusiasts, has been the lack of any proven technique for reliably promoting a significant change in weather. When the techniques do become cost-effective, and especially if they are available to the private sector of the economy (and most especially if they can be cheap and anonymous or surreptitious) the development of policy toward weather will be exceptionally controversial. Internationally the problems will be no easier, unless weather modification remains restricted to very localized changes. The international problems will be especially difficult to cope with whenever substantial weather modification is proved to be the ineluctable by-product of some important economic activity or development, so that there is no way to handle the subject merely under the heading of weather programs and their regulation.

It is important to remember that, giving "environment" a broad definition, there are deep divisions and sometimes bitter disputes within our own

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country about just what an "environmental problem" is and whether anything ought to be done about it. Household pets are an excellent example —dogs and cats especially. Billboards along a highway, nude bathing in public beaches, musicians on street corners and in public parks, violence on television, driving automobiles with a certain alcoholic concentration in the blood, possession of guns, pornography, political loudspeakers, snowmobiles, and even dress or hair style are matters about which people may have strong feelings, and on which, for most people, "the problem" is all those other people who do not share one's own taste or morality or fears or needs.

We all impinge on each other and we all help to constitute each other's environments. There is hardly any "technical solution" to the control of cats and dogs and snowmobiles and itinerant musicians and nude bathers and barefoot teenagers and cigar smokers that would be universally welcomed. Some of the issues are morally divisive, and some involve constitutional questions. Many involve distributional asymmetries—what is a privilege or blessing for some is a curse for others. Some are physical, some behavioral, and some are symbolic.

Smoke and poison and trash are nicely physical, unquestionably environmental, and universally considered to be problems. But if the demand for cotton is inelastic, a boll weevil that universally afflicts crop production may be a blessing to cotton farmers because it restricts production everywhere and causes the price to go up in greater proportion, and in the absence of a perfectly functioning economy that scourge may be perceived as a blessing by many, and even in a perfectly functioning economy it can look like a blessing to the cotton farmer. If some new navigational hazard should appear that afflicts only whaling vessels, members of the Sierra Club may want to protect the hazard. While nobody wants to protect the microorganisms that cause smallpox or polio, and the bedbug might never make the endangered-species list even if its extinction were in sight, live creatures, especially those that are livelihoods to some and predators to others, typify the lack of unanimity about just what the environmental problem is.

Asymmetries Between Rich and Poor Countries

There are bound to be major disputes between rich and poor countries, just as there are between the rich and poor within a country. In addition to the disputes that may happen to arise between countries, some of which are rich and some of which are poor, there will be important disputes that arise directly out of the different levels of wealth and well-being, or the different levels that get reflected in their governmental decision making.

The rich can afford clean air while the poor want cheap electricity. The rich can afford auto inspection and emission controls that raise costs while the poor may want cheap cars with good mileage. The question of what kind of clean-up is worth the cost will always get a different answer in rich countries from the one it gets in poor countries.

A special luxury of the rich countries is that they can afford to worry about remote dangers. Some things have a low probability of producing disaster; poor people can drive automobiles that may go out of control, sail on ships that have no lifeboats, fly airplanes that lack safety equipment, and use chemical processes that are considered to have a small probability of causing enormous harm. Or they can work in hazardous occupations. The poor can afford to do without sanitation; that is to say, they cannot afford the sanitation that would be standard in rich countries. If there were no provision for levying extra costs on rich countries, but instead a tradition that every country does its own cleaning up and takes its own precautions against worldwide disaster, rich countries and poor countries would have wholly different ideas of what is worthwhile, of what is worth the cost. What is intolerable to a rich country may be standard in a poor country.

Assuming that both the rich and the poor may take actions that risk global inconvenience or global disaster, rich countries and poor will not only reach different decisions on their own but are bound to have an unresolvable dispute about what standards should apply universally. To the extent that each country is acknowledged to have an obligation to minimize certain hazards and to avoid certain kinds of environmental degradation, the rich and the poor will have quite inconsistent notions of what the standard obligation is. The technical problem of how to clean up the environment will then often give way to the dispute, whether to clean up the environment, or to the distributional question, who pays and what costs are justifiable. As discussed later in this paper, when there are global environmental problems that require the expensive cooperation of all, what will look to the poor countries like equitable cost sharing will often look like blackmail to the rich.

Exporting Pollution

A particular question about the economic relations among rich and poor countries is pertinent here, although this treatment of it should be considered by way of a long footnote; the reader not

interested in the question of "exporting pollution" may pass on to the next subheading.

There is an argument about whether "exporting pollution" is a good thing or a bad thing. Suppose there is some noxious production activity that American cities will not allow but that will be allowed in certain Latin American countries. The harmful effects, instead of falling on Americans, are spread among the people of the Latin American country. They get the smoke or the asbestos or whatever it is.

One point of view is that that is bad, because we inflict on poorer countries the nuisances and damages that we would not tolerate at home. The other point of view is that if they are willing to accept the noxious production that's their business, and we should let them make a living by producing things that cause a harmful environment.

There are two important different cases to consider here, and from an international relations point of view they are worth distinguishing.

One case relates to the first point made above. That is the case in which poorer people in a poorer country are willing to suffer disagreeableness or hazard or ill health for the sake of making a living that in our higher standard of living people would not be willing to accept. In this case, the incomes earned in production are worth the noxious byproducts. Americans, with better opportunities, do not have to engage in the disagreeable work; people in poorer countries are willing to. It would not help them, for us to conspire to deny them productive opportunity, because at their standard of living they consider themselves better off earning the higher incomes and suffering the consequences.

The second possibility, wholly different, is that the governmental institutions in that other country are either easily corrupted or incapable of recognizing the external environmental effects of some productive opportunity that is welcomed by the people who would participate in the incomes that go with it. It may require a rather heroic effort to get any community to decide through its collective political processes that some environmentally deleterious activity shall be prohibited. If that activity then springs up in a foreign country, this may not mean that there has been a cost-benefit calculation in that country, and because of its lower standard of living the productive activity is worthwhile. It may simply mean that it will take 10 or 15 or 20 years for that country to reach the same conclusion, and to act on the conclusion, that we finally reached. The institutional development needed to prohibit certain activities in this country may simply be slow in developing in some other country.

The same problem can arise domestically in the United States. A noxious or dangerous activity may be banned in the in the Boston metropolitan area. Whether or not it can be established in New Hampshire may depend very much on whether New Hampshire is capable of a political decision to ban something that, if it makes no sense in Massachusetts, also makes no sense in New Hampshire. The fact that it goes on in New Hampshire may not mean they weigh the costs and benefits differently in New Hampshire. It may mean that New Hampshire is simply incapable yet of banning an activity that eventually in its own interests it ought to ban, or that the government of New Hampshire is more responsive to certain special interests than to some larger public interest.

The point here is two-fold. First, in strict economic terms it can well be true that an activity that a prosperous country would prefer not to engage in can be a blessing to a poorer country that weighs the benefits and costs differently. It may do no good for coal miners or copper miners in a poor country that we refuse to import the coal or the copper because mining conditions do not meet American standards in those countries.

The second point is that there is politics involved as well as an economic calculus. The fact that something occurs in the countries does not mean that there has been a participatory collective decision in that country that the benefits are worth the costs. Thus the important logical point that activities considered intolerable in a rich country may be tolerable in a poor country should not be confused to mean that if those activities occur in a poor country it is because they are considered worthwhile. "Exporting pollution" may or may not reflect the simple principles of free trade, and it may be as important to recognize that the possibility does not mean certainty, as to recognize the possibility.

Distributional Issues

Many environmental changes will be universally recognized as a cost or problem, even though the costs may be severe in some countries and barely noticeable in others. But there will be some environmental changes, or activities that entail environmental consequences, that substantially help certain and substantially hurt others. The "hurt" may not be simply some excess of cost over benefit, requiring a vigorous cleanup campaign. It may be inherent in the change that helps one country that another is harmed. Climatic change is an example.

There will often be a serious cost-benefit issue, whether the good effects outweigh the bad effects. If the good effects fall in rich countries while the bad effects fall in poor, there may be serious dispute even about how to weigh the benefits and the costs. But assuming that the calculation shows a net be-

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nefit, by most people's standards, for the world as a whole, there remains the fact that some people are worse off, while others are better.

It is important to note that the problem here, if it is recognized as a problem, is not an environmental problem. That is, its solution has nothing to do with the environment. Its solution will be purely distributional, or compensatory.

Not only is it important to recognize that the problem, though caused by an environmental change, is not itself an environmental problem, it is important to recognize that the solution will typically not emerge from the rearrangement of some environmental program. If an otherwise useful program has side effects that cause harm —dirt, noise, infection, spoiled crops, broken windows or dead fish—it may be possible to budget "cleanup costs" as part of the program. In these there is furthermore typically some measure of how much harm has been done, and how much is required to clean it up or otherwise to offset it. Putting things back the way they were ought to be enough. It will not always be possible to eliminate the last remnant of smell or to make somebody's flower bed look the way it used to look; but in many cases it will be possible to go even a little further, and leave things cleaner than they were before we messed them up.

But in these purely distributional cases, in which the harm is not removed but merely compensated, it is much harder to estimate or argue about the size of the damage or even the nature and location of it. Whoever is hurt by an ugly mountain side, we can fix him up by landscaping the mountain, and we do not even need to know who he was, whether a resident or a passerby. But if we carry away a mountain, leaving nothing in its place, and cannot rebuild the mountain, restitution requires knowing who suffers and how much.

These are inherently difficult problems, at least if they are acknowledged as problems in the first place. Particularly if those who are hurt are different kinds of people from those who are helped, with a different income level, different culture, different lifestyle, and different expectations, it may be hard for those who budget the restitution to discover, whether by analysis or by introspection, how much harm they have done. And there will be no way for those who seek restitution to make fully credible allegations or to document the amount of harm.

In these cases it will always be hard for anybody on either side to be sure just where to draw the line between restitution and extortion. And in many of these cases there may be a temptation to take as the guiding philosophy that if on balance the program is a good one, the chips are to lie where they fall. Cleanup costs may be properly assessed on the beneficiaries, but the irremovable and ineluctable consequences of a change for the good are merely tough luck.

The Question of Property Rights

Much of the literature on domestic environmental issues revolves around the question where to locate the property rights and liabilities. Does the airline have to pay me in order to fly over my house, or do I have to pay the airline to route its aircraft somewhere else? Does the electric utility pay the residents downwind for the right to put smoke in their atmosphere, or do they pay the utility for cleaning up its smokestacks or moving to another location? A good part of the argument relates to efficiency: if we residents would rather have the money than the smoke removal, the company pays us for the privilege of putting smoke in our air, which is cheaper than cleaning up its smokestacks. If cleaning the smokestacks is cheaper than the minimum we would demand as compensation, the company will clean the smokestacks, which is the "correct" outcome. If I will be happy with compensation in an amount less than the cost of re-routing the airplanes, the "efficient" outcome is for the planes to keep coming over my house, while if it is cheap to re-route compared with the harm they do me, I will demand so much compensation that the planes will be re-routed. The other way around, if the right of way belongs to the airline, the question is whether it's worth more to me that the airplanes be re-routed than it costs to re-route; the airline will re-route its planes only if I am willing to pay the cost.

In this discussion about property rights, a good deal of controversy is related to the costs of bargaining, the costs of bringing suit, the costs of organizing numerous small parties into a coalition that can tax itself to pay for what it wants, and so forth. But another important part of the problem is the question of who "ought" to have the right, rather than where it is "efficient" to locate the right. Does a fisherman have the right to clean his fish in the river, or does somebody downstream have a right to clean water? Do you have a right to keep a cat if it eats birds, or do I have a right to protect the birds against predators? Do children have a right to laugh and sing as they play, or do I have a right to quiet?

The answers to these questions have to be moral, legal, cultural or institutional. Either there is a conventional way of determining what is right, such as tracing historical precedent, or else there must be some notion of what is proper, natural, normal, or what has the blessing of God. Note that these are

typically purely "distributional" issues, as I used the term above.

One of the difficulties with environmental change is that the beneficiaries and the victims will often have different cultural traditions, different legal traditions, different conceptions of "natural right." An Indian tribe that has always collected migratory birds as food may be as adamant about its right to continue as a Sierra Club member is about his own rights in the migratory birds or even the rights of the migratory birds themselves. My right to defend a child who has a strep throat with penicillin may look absolute to me, but if it speeds the evolution of penicillin-resistant germs, to endanger your children, we may have a difficult dispute to adjudicate.

In some cases it will be hard even to know where the base point was. Weather change may be an example. If it is recognized that industrial activity, urban growth, irrigation and cultivation, and land clearing have been working climatic changes for hundreds of years, an effort to control climate may look to a victim like one more gratuitous interference with God's world, but to the beneficiary may look like a timely restoration of adequate rainfall, clearer skies, or whatever it may be.

Note again that this is not an environmental problem. It is essentially a judicial problem, one that arises out of an activity that has environmental consequences, but the issue is the moral or legal issue of whose rights should prevail.

Notice that this issue links with the issue previously discussed. One kind of issue is to determine who, if anyone, has some kind of "right" either not to be disturbed by others or to proceed in spite of the disturbancy causes. The other issue is how to assess the amount of damage, if the process is to be one of awarding damages or restitution. And note again that if the procedure for arranging damage or restitution is simply bilateral bargaining, the party with the rights having its way unless it yields in return for compensation, we are back at the old question of whether those who demand compensation have a "right" merely to be compensated for loss or damage, or instead, like the owner of a work of art or a piece of land, have a "right" to sell it for all they can get.

The Question of "Stewardship"

The cutting of redwoods, the bloody destruction of seal cubs, and construction projects that destroy the nesting sites of some threatened species of birds, remind us that there are some kinds of universal "common property" over which national sovereignty is at least disputed. The same may be said about places that are unique from the point of view of scientific research—the last remaining forest that is untouched by insecticides, the fossil remains of earliest man, and so forth.

Like the treasures of antiquity that are going to be, or that were, inundated in consequence of the Aswan Dam, there may be more and more concerns expressed by outsiders about the things that governments may do inside their borders. This problem arises domestically and it may arise internationally. In a few cases the problem may be environmental, in the sense that there are technical solutions, like diverting a river to avoid flooding something, or logging a forest in a way that does not disturb the rest of the wildlife, but the issues will probably arise more in that context of rights and obligations than in the technical context of an environmental problem that has an environmental solution. It will differ from some of the questions of rights and obligations I discussed a minute ago in that there may be a clear right, or legally acknowledged right, for a nation to do all kinds of domestic "damage" if there are no physical effects that spill over externally. Christians probably have no legal basis to enjoin somebody from converting the town of Bethlehem into a shopping mall; and it may be a poor idea to let people charge ransom for everything they control that somebody else cares about.

There may be a need here for some quasi-judicial institutions and traditions, particularly where endangered species, scientifically unique repositories and events, religious shrines, works of art, and other objects of universal interest are concerned.[1]

National Motivations and Capabilities Toward Environmental Effects

In demanding compensation for damages suffered, or in demanding that other countries share in the costs in one country's participation in some environmental activity, there are several different levels of motivation that may be involved. It may be important not only to keep them in mind, in order to perceive them, but to give a little thought to which among these motivations are to be considered "legitimate."

It will be easiest to illustrate what I have in mind with a tangible example. Let there be a bollworm that afflicts cotton. At one stage in its life cycle this worm is a butterfly that can travel several-hundred-miles. This worm can do cotton damage worth several-hundred-million dollars in California and Arizona. The United States can use chemical spray and can burn the old husks and stalks, to keep the

[1]The extreme case of course is the persecution of people about whom outsiders care—Jews in the U.S.S.R., political martyrs, and militarily-occupied populations.

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bollworm under control. But across the border in Mexico the bollworm may flourish if there is no complementary spraying and burning program; and during the butterfly stage in the life cycle, the Mexican bollworms can invade California and Arizona. (Note: The same or similar problem would arise with rats or poisonous snakes, disease germs, people carrying disease, people who engage in certain criminal activities, smoke and soot and windborne chemicals, etc. The illustration is specific but can represent a broad class of activities, with the "agents" ranging from inorganic particles through butterflies and rodents and coyotes up to and including bandits or drug peddlers.)

In view of the American interest in the Mexican spraying, two questions arise. First, would the aggregate gains to cotton farming be worth the cost of spraying in Mexico? There may of course be a dispute about this, especially if the Mexican government thinks not but the American government believes so. But supposing for the moment a positive answer to that question, the second one is, how might the Mexican spraying be paid for? Specifically, might the United States pay for cost of spraying in Mexico, or share in its cost, and how much might the United States pay? How much might the Mexican government demand?

Case 1. An important possibility is that spraying and burning is worthwhile in California and Arizona but not in Mexico, for reasons having to do with cotton density, meteorology, and all of the cost-benefit calculations that might lead the United States to decide that a chemical program is worthwhile yet leave the Mexican government to decide that a chemical program is not worthwhile. But the United States might be so affected by bollworms flying up from Mexico that it would be willing to subsidize part or all of the Mexican cost of bollworm abatement.

This is a case in which the Mexican government has no economic interest in the chemical spraying, but may be willing to cooperate if the American government will pay all of the costs, or perhaps merely pay the excess of the costs over the benefits that the Mexican government perceives. Even in this case there can be two quite different attitudes toward cost-sharing and compensation. One attitude is that chemical spraying is simply a production cost in the raising of cotton that, depending on the differential technology between the two countries, is worthwhile in some countries and not in others. The alternative attitude would be that the bollworm is a plague or menace or nuisance that every self-respecting government has an obligation to suppress. It is like the bubonic plague, banditry, drug abuse or hoof and mouth disease. A government cannot claim to be meeting its international obligations when it fails or refuses, merely because of an ad hoc cost-benefit calculation in this particular case, to participate in the worldwide suppression of a common danger.

In other words, there is first the question of "obligation," which tends to set the base line. But noting that, let us move on and suppose that there is no such obligation with respect to the bollworm.

The Mexican government may then "legitimately" discuss direct compensation for the costs that will incur, or perhaps indirect compensation in the form of American participation in some environmental program that benefits mainly Mexico and is otherwise not worth the cost to the United States.

Case 2. A second possibility is that the Mexican government, like the American government, considers a chemical spraying program worthwhile. The Mexican government may nevertheless recognize that the American government has a strong enough interest in Mexican spraying to be willing to finance part or all of the Mexican program. In this case the Mexican government probably would go ahead with the spraying at its own expense if there were no possibility that the American government could be induced to help defray the cost. But it may hold up its spraying and bargain for compensation; or go on with the spraying but threaten its termination in the absence of some American sharing in the costs.

This is a case that can look like "blackmail" from the American point of view. The Mexican government would "naturally" be motivated to spray, but threatens not to unless the United States pays part or all of the cost. The Mexican government wants to be even better off than if it went ahead with a spraying program that is by itself economically worthwhile.

This can be one of those touchy cases in which it is not altogether clear what the rights and obligations are, or even what rules of the game surround the negotiation. One way to construe the situation is that every country is expected to do its own spraying except when spraying is uneconomical and not in the national interest, in which case it may invite an interested neighbor to bear the cost. But if spraying is economical, it is an unfriendly act to terminate or postpone the spraying to extort blackmail out of the interested neighboring country.

An alternative way to construe the situation is that a common danger, the bollworm, has been identified; the two countries should have a common program, namely chemical spraying, to control the danger. Various possible formulae may cover the sharing of the costs, and these are a legitimate topic for negotiation. Possibly the richer country should cover the entire cost; possibly the costs should be proportioned to the benefits (with the United States possibly making a net transfer to Mexico if the net

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benefits to Mexico, though positive, are less than those to the United States), possibly the bollworm should be assimilated to a package of other issues and handled in terms of total costs and total benefits arising out of insect control, water-resource control, border patrolling, and so forth.

The diplomacy can be a little ugly if in this case the Mexican government reaches a conclusion that spraying is not economically worthwhile but the American government estimates that the Mexican government has come to the opposite conclusion and is simply holding out for some extortionate compensation. Or the United States may believe that the Mexican government has reached a negative but incorrect conclusion, either by exaggerating costs, or by underestimating benefits, or by treating some side effects erroneously. An important possibility is that at the outset the Mexican government genuinely believes the spraying not worthwhile; a regular arrangement is entered into according to which the U.S. Government participates in the financing; at a later date the development of cotton in Mexico, or the technology of spraying, changes the underlying arithmetic so that left to itself the Mexican government would probably spray, but there is now a tradition of sharing the cost, and the continuation of that tradition may not look like "blackmail."

Case 3. Still using Mexico and the bollworm simply as a vivid illustration, and without imputing any actual motives either to the American or to the Mexican government, we can see still another possibility here, real or fictitious. That is that the bollworm is encouraged to become an American nuisance so that the American government will make important concessions, or pay substantial amounts, to suppress the bollworm. There is no economic reason why the American payments should be much less than what the spraying is "worth" to the United States, even though that amount might greatly exceed the cost of the spraying in Mexico. Actually, in the absence of governmental jurisdiction, any American cotton farmer who refused to spray his own fields might discover that he could do enormous harm to other cotton farmers for a hundred miles in every direction, and like the owner of the last little plot of ground on a projected site of some large structure, he could hold out for "extortionate" compensation. It might well be his legal right, especially if he could demonstrate that he suffered some intangible harm from using the chemical spray.

Again it is to be stressed that the situation may look very different from the two different sides. Especially if the spraying involves some social disruption, some interfering with farmers' rights, perhaps relocating some schools or villages, educating people in the control of bollworms, etc., there may appear to be a number of "indirect" costs that could look genuine to the Mexican government and spurious to the American. The situation would be aggravated, of course, if the Mexican government were innocently engaged in a number of developmental activities that had the side effect of increasing the annual crop of bollworms. Just as there has to be some kind of baseline in order to determine whether or not a government has an obligation to undertake some program, like the suppression of bollworms or bubonic plague, there may need to be another notion of the appropriate baseline in order to determine when a government can be accused of deliberately creating environmental problems for its neighbors. (The home owner who thinks he can not afford a lawnmower, and lets his grass grow long to the detriment of the neighborhood, and who finds that neighbors come mow his lawn for him, may begin to think of other "favors" they would be motivated to do, like removing his trash if he tends to let it accumulate too long for their comfort, or raking his leaves if they blow onto other lawns downwind.)

Those are the three important cases to distinguish when the Mexican government can engage in an effective spraying program but may want some compensation. Case 4—actually, Cases 4 and 5—arises when the Mexican government is unable to take effective steps against the bollworm. And here it is important to distinguish, especially in thinking about American participation in solving other countries' problems, between a government's being technically or economically unable to carry out the program and the government's being legally or politically unable to do it or to get it done. A government may not have the legal right either to spray crops or to require that people spray their crops. If the spraying is widely believed, even if erroneously, to have harmful effects on growing children or to spoil cow's milk, the government may be legally unable to do what would physically be quite easy. It is important to reflect on how many things done in America that affect the environment are done privately and not by the government; and among those done privately it is important to recognize how many of the activities might be suppressed only through measures that are either jurisdictionally not available to the federal government or perhaps constitutionally unavailable to any government.

In Case 4, the Mexican government willing but unable to participate in the spraying, a possible solution may be for the United States Government to do the spraying. (The bollworm illustration sounds like a case in which this "solution" might be pertinent; there is no reason to suppose that such a solution is always available.) The diplomatic difficulties are likely to be least if there are visible technical reasons why a government can not do what is

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asked of it, and greatest when there are cultural or religious or political objections that the partner country either can not understand or has no sympathy. (It is worthwhile reminding ourselves that even disarmament treaties can raise constitutional issues about invasions of privacy, and some of the noisiest bullhorns in our environment are protected by the First Amendment to the Constitution.)

The way the problem may often arise will be that the costs and benefits within a country fall to very different parts of the population; in an aggregate calculus, it looks as though the spraying, or whatever the program is, would be worthwhile for the country as a whole. But the damages and costs may be concentrated on particular parts of the population that either have a political ability to block the program or have a strong moral claim to protection. If the government in that case has no available techniques for transferring some of the "benefits" to those who suffer, that is, effecting some internal compensatory arrangement, it may feel precluded from going ahead with the program. (The airport noise problem can usefully be recalled here.)

It is undoubtedly far-fetched with respect to the bollworm, and I hope out of the question in terms of Mexican-American behavior, but a few additional cases can be built on this example. One is a case in which the United States would arbitrarily take the matter physically into its own hands, doing the spraying in Mexico whether invited or not. There are surely some countries and some activities that would invite this response, just as it can happen internally even between cities. (The 1970 invasion of Cambodia is an extreme case of a country's nominal inability to exterminate a noxious activity sighted near its own border, to the physical jeopardy of an adjacent country.)

More subtle would be the cultivation on the American side of some organism or other activity that would do for Mexico what the bollworm was doing for California and Arizona, in order to "trade" cleanup programs for reciprocal benefit.

Useful Analogies to Environmental Issues

In order to think about how "environmental problems" should be handled within the U.S. Government, or jointly with other governments or through international agencies, or even left unmanaged altogether, it is useful to consider what other kinds of problems the environmental problems may most resemble. As I have insisted above, problems and issues that are initially perceived to be "environmental" may not continue to be defined by reference to environmental phenomena in their handling. Furthermore, the class of things that are called "environmental" is somewhat arbitrary, and while it may be convenient for many purposes to use a particular and somewhat restrictive definition of "environment," as for example in the establishment of early-warning systems and global monitoring arrangements, the nature of the problem and especially the nature of its handling or of any solution, may be better perceived by identifying it with some different but overlapping class of problems.

To provide a vivid example we can again use the bollworm. The bollworm, if not suppressed by the Mexican government may fly across the border and deposit something harmful in American cotton farms. Smugglers of marijuana, if not suppressed by the Mexican government, may fly across the border in airplanes and deposit something illegal or pernicious in the American market. Smugglers of "wetbacks"—the picturesque name might have to be changed—unless suppressed by the Mexican government may fly airplanes across the border and deposit illegal immigrants. Airplane hijackers may fly in the opposite direction, seeking safe haven in Mexico unless suppressed by the Mexican government. Counterfeiters in Mexico may fly their engraved plates or their bundles of money across the border. Mexico may offer legalized betting on American sports, may permit opium dens that attract American tourists or brothels in which venereal disease is spread to American tourists, or provide blood sports or pornography of the kind that are prohibited to Americans at home but easily available across the border. Pornographers may assemble their printed matter in Mexico and either smuggle it across the border in airplanes or ship it across in ordinary air mail. Color television from Mexican transmitters might beam X-rated programs at television sets within 75 miles of the border in American homes. And so forth.

Whether or not the electromagnetic spectrum is part of the "environment" is an arbitrary matter of definition; it may not be useful to establish an "environmental agency" that is charged with monitoring and doing something about radio and television programs that are subversive, pornographic, or in violation of copyright. But in thinking about how to organize the government to deal with a noxious insect or disease germ or some airborne or waterborne waste, it may be useful to examine what can be done and what has been done about piracy, pornography, addictive drugs, even dangerous research.

Consider a hypothetical new Caribbean independent country. It can dilute the market for coins and postage stamps, and while there may be objections from philatelists and numismatists, there is unlikely to be a diplomatic offensive against it. If it declines to participate in any international copyright ar-

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rangements, it may become a source of "piracy" of manuscripts and recordings, printing books and phonograph records to the economic detriment of authors and performers in other countries. It could go further and encourage counterfeiting, industrial espionage for profit, even training schools for pickpockets and bank robbers. It can allow research and development leading toward new kinds of weapons and new kinds of addictive drugs. It can provide safe haven for criminals of all kinds, including hijackers.

Some of these activities it can do quite innocently, and if other nations prefer that it not be done, they can enter into negotiations. Some of these activities it might wish to suppress but be unable to suppress; it may have a coastline that it cannot adequately patrol, it may not have a police capability to find the counterfeiters. Some activities may not be offensive to the local culture but offensive elsewhere. Still other activities may be offensive but constitutionally protected. Finally, over the line, some activities may have an enormous nuisance value, whether encouraged by the government or merely allowed by the government or halfheartedly suppressed, with the possibility that suppression may have to be paid for by other countries, perhaps at inflated prices. (In this country the hurdy-gurdy man played music until you tipped him, the tip being not a token of appreciation but the price he demanded for stopping the noise beneath your window.)

A splendid example of an analogy to an environmental problem that has not been typically classed as "environmental" is the production of heroin, or of the opium poppy. Heroin addiction has occasionally been analyzed with the help of epidemiology and treated as a public health problem, as a contagious disease. Heroin is a severe public health problem in America that results from foreign agriculture. The cultivation of poppies in Turkey must have caused much more harm in America than the cultivation of cotton, and indirectly of the bollworm, in Mexico. The epidemiological connection is social and cultural and economic, not purely physical or biological. But the distinction does not make much difference.

The opium poppy raised one of those "property rights" issues that I mentioned above. The Turkish government took the position that cessation of the production of opium poppies would be a severe disadvantage to Turkish farmers. The United States experimented with compensatory programs, offering money to Turkey to compensate for the elimination of this noxious production process. It could never be altogether clear whether the United States was being shaken down by an extortionist or was providing restitution, in a friendly way, to a country that had a "natural right" to continue a traditional kind of agriculture.

The particular diplomacy over heroin was undoubtedly affected by the alliance and foreign-aid relationship between Turkey and the United States. As with so many "environmental" issues, the handling may be less determined by the chemistry or the meteorology of the environment than by the politics and diplomacy of the particular countries involved. The compensatory payments to Turkey were quite an extraordinary diplomatic event, in sharp contrast to the way this country dealt with the pirates of Tripoli. But the program to buy off Turkish farmers did not last long enough to offer much experience to date in how high the price may go when the worth of cessation of a noxious activity to the victim country is far greater than the value of its continuation in the producing country. The opium poppy reminds us that a government may be politically unable to cause the necessary change in crops, or physically unable to police the suppression of an opium crop, or unconvinced of its obligation to suppress an activity that is harmful abroad, or able to pretend that it needs compensatory programs that it can not afford, and without its ever being absolutely clear just how both sides characterize the transaction.

Radio and television can be another kind of environmental intrusion. It can be deliberate, as with the Voice of America or even the threat of satellite-borne television transmitters aimed at private sets in foreign countries. Radio and television can provide subversive information and propaganda, command and intelligence for illegal activities, information and instruction on the conduct of illegal activity (abortion, bank robbing, sabotage), propagandist interference in political processes, pornography and violence, slanderous information out of the reach of damage suits, proprietary information unprotected by copyright, or even plain slovenly language that degrades the standards of speech. There are actual examples of most of these activities somewhere in the world. Most of them are local and short distance, hence somewhat bilateral. They are probably a rich source of examples of the kinds of problems that many "environmental problems" will turn out to be.

Research and development are activities that may have at least three different kinds of impact on our "environment." One is familiar: the activity itself—nuclear testing in the atmosphere, the escape of chemical weapons from their containers, the introduction of a species of plant or insect or animal that may get out of hand—harms the environment, either predictably or with some recognized probability. The fact that some of this is well-intentioned, as in combating disease or finding a "harmless" insecticide for agriculture, and some may relate to warfare, and some may even look like the one and be advertised as the other, makes it hard to estab-

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lish any kind of international regulatory jurisdiction.

A second important possibility is that research and development leads to something wholly unexpected. Concern has recently been publicized that certain kinds of research in microbiology might lead to the synthesis of an entirely new virus, one that might be lethal to people or plants or animals and against which there would be no "natural" protection. It is interesting that this issue, as typically reported, was treated as a national and not an international decision. Imagine that it were not the United States but Cuba, and the probability not remote and ambiguous but vivid and substantial, and the internationally perceived threat to "the environment" might have been quite different.

There is a third interesting possibility. It is that the purpose of research is to develop something that could be construed as an environmental menace at home or abroad. Research aimed at involuntary, remotely-administered contraception; at new potentially monopolized addictive drugs; at various kinds of weapons for military or even private use; at techniques of behavior control, possibly even at weather control, could be considered a potential environmental menace not because of the risk of accidents or of inadvertent harmful developments, not because the activity itself produces noxious substances, but because the knowledge that is being sought would be harmful or dangerous or susceptible of enormous abuse.

Imagine that tobacco were a rare plant hard to cultivate, and that smoking were confined to a very few, and some government foresaw the possibility that 75-million Americans might smoke cigarettes if an appropriate strain of cheap tobacco could be developed. Or opium. Consider a national research and development program somewhere to develop nonmetallic guns.

The most familiar example of these problems is in nuclear energy. There is a collective effort to embargo certain kinds of nuclear technolgy and information, and to make certain kinds of research and development difficult if not impossible. (Except for the ban on testing explosives, the effective withholding of nuclear technological information may be tapering off.) There is an effort to enforce common safeguards against the diversion of nuclear materials. There may be an effort to oblige countries to take more care with the physical security of reactors. And it is possible that the transportation of poisonous plutonium or fissionable materials will come to be treated as an environmental problem, with special attention to theft and sabotage. The question of a "natural right" to develop nuclear technology, and at least to be handsomely compensated for foregoing "peaceful nuclear explosives," or a nationally self-contained nuclear fuel cycle, has already come up. There is nothing to keep a country, especially one that has become newly wealthy, from cultivating and selling nuclear explosive material much the way Turkish farmers cultivated and exported opium.

Some Organizational Implications

A main organizational implication of the thoughts presented in this paper is the one introduced at the outset. It is that an "environmental problem" may *arise* in one context or jurisdiction, one that possibly has a technological definition, and has to be *handled* in a wholly different context, one involving the ways that people live or produce or, most important, the ways that people settle damage claims or share costs or provide compensatory programs. Even solutions that regulate the activities that give rise to the environmental problem may have little in common technologically or jurisdictionally with the problem itself. At one extreme is sonic boom caused locally by a fast aircraft, ameliorated by redesigning the aircraft or re-routing them; both the problem and the solution are closely identified with air travel, and the problem seems nicely compact. But, especially when the effects on balance are beneficial but involve net costs to some and benefits to others, the "solution" of the problem may have nothing at all to do with the environment.

A second organizational implication is that there are substantial differences, not limited to jurisdictional differences, between organizations designed to regulate "environmental activities," and organizations designed to assess costs and damages and benefits and to design compensatory arrangements. One may be essentially technologically-oriented, the other financial. There are strategic questions even about getting into the business of compensation, and there may be nations that wish to design international institutions that have a more purely regulatory competence and others that wish to design them primarily with a view to redistributing costs and benefits.

An important question on which the above ideas have a bearing is whether there should be an effort either nationally or internationally to have a kind of "master organization" to cover all environmental issues, or instead to separate the different problems jurisdictionally, with nuclear energy separate from whales that are separate from sulfurous smoke that is separate from aerosols that are separate from DDT. The case for some kind of master organization is probably strongest if the main function is going to be measuring and monitoring and identifying and engaging in early warning. If regulation

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is involved, whaling and insecticides and nuclear accidents may have too little in common in the activities to be regulated, even the kinds of regulation, to go well together. And if cost-sharing and compensation is to be a large part of the activity, a good many precedents with respect to property rights and natural rights and obligations will appear to be established even in the definition of the scope of such an agency.

A regulatory commission or agency or international institution set up to monitor the weather or the whale population or the level of background radiation or the ozone layer is unlikely to be drawn into leaded gasoline and oil spills and radio-jamming. An institution like a world bank or monetary fund, set up to assess worldwide costs and damages and to effect compensation, redistribution, equalization, or whatever one wishes to call the program, will be inherently capable of accommodating a larger and larger package of issues.

Thus even the definition that we might wish to apply, nationally or internationally, to "environmental issues," has strategic organizational implications at the outset.

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History of U.S. Government Organization for Conduct of Foreign Policy in Technology-Related Subjects

Eugene B. Skolnikoff
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The history of the organization of the U. S. Government for the conduct of foreign policy in technology-related subjects such as global environmental and resource interdependence is one that illustrates well the difficulties the foreign policy community of the government has in recognizing and coping effectively with new elements in foreign affairs. It is particularly revealing if, as in the case of science and technology, the new elements have become prime agents of change in the international system and thus major factors in shaping the world within which the United States must make its way and for which it must prepare.

The general lesson from postwar history in the conduct of foreign policy in technology-related issues is the great difficulty the Department of State has in exerting anything like a primary role. The technical, operating agencies of government tend to have the initiative in determining policy in their areas of interest, with State able to exert its presence usually only at the point at which issues become specific and current. Even then, the momentum of earlier decisions, the greater technical knowledge, and the mobilizable resources of the operating agencies, have meant that State has relatively little independent leverage except in those issues for which it is able to mount a special and unusual effort. With regard to the direction of technological development itself, which will shape the future, the Department of State has essentially no role at all.

HISTORY

A brief schematic review of the evolution of Federal government organization for the conduct of foreign policy in these areas is a necessary preliminary to an examination of a few issue areas from the past. That examination may help to an understanding of the effect of organization on policy outcomes, or the lack of effect, and on needed changes for the future.[1]

It presumably is not necessary here to develop the general background of the role technological development and application has had in altering the international political system and the character of issues with which foreign policy must be concerned. Atomic energy, space, ocean exploitation, long-range missiles, and new communications technologies, are some of the recent specific developments that must be dealt with in international relationships; interdependence, global environment alteration, new geopolitical relationships, nuclear proliferation, and the population explosion, are some of the broader, resulting effects that have changed the world scene. These are by now commonplace observations, yet the appreciation of the interaction of technological development and international politics is still ill-formed, and the recognition of the need to couple broad technical understanding of issues effectively to policy choices in the foreign policy process is more a matter of rhetoric than effective action. The issues posed by rapidly advancing applications of technology become more serious, and profound, and often dangerous; the reflection in the policy process is marginal at best.

One result is that measures that must be taken in the short-term in order to prepare for longer-term needs (e.g., building international institutions, setting new precedents of acceptable national behavior, and delaying program implementation because

[1]For a detailed history, see the 1967 analysis, E. B. Skolnikoff, *Science, Technology and American Foreign Policy*. M.I.T. Press, 1967.

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of possible later externalities) are rarely considered, or are deferred in favor of action that may be justified only for short-term benefits. Another result is that the range of foreign policy objectives that should govern program choices is often severely limited, being determined more by those who understand the technical programs than by those with broad foreign policy responsibility. At the least, a policy process must be capable of developing options for policy that is not restricted primarily to those options technical operating agencies desire to see for their own parochial purposes.

The postwar years saw many innovations in government structure that altered the policy process for technology-related foreign policy issues. Some of the most important were the creation of the National Security Council (NSC) as a White House policy mechanism, the creation and subsequent demise of the President's Science Advisory Committee (PSAC) and the Office of Science and Technology (OST) in the White House and Executive Office of the President, and the establishment of four new independent agencies: the Atomic Energy Commission (AEC) (in 1974 divided into two agencies, one for research and development (R&D), other for regulation), the National Aeronautics and Space Agency (NASA), the National Science Foundation (NSF), and the Central Intelligence Agency (CIA). The AEC and NASA both represent government responsibilities wholly derived from technological advances, unknown and essentially unimaginable before World War II. They also demonstrate how well-funded bureaucracies with clearly defined achievable technical tasks can develop competence and momentum that can quickly give them a dominant policy position on issues, including international questions, which touch their interests.

The major problem with regard to technical bureaucracies is more often not how to avoid delay and incompetence, but how to bring an efficient juggernaut under control.

The reorganization of the three services into a single Department of Defense (DOD), with its own often powerful foreign policy arm—the Office of International Security Affairs (ISA)—also had a major impact for the foreign policy process in this range of issues.

Just as important as these new and reorganized agencies were the growth of international activities and contacts of the older departments: Agriculture, Commerce, Health, Education and Welfare, and even Interior. These activities in specific technology-related fields such as weather forecasting, water resources, oceanography, standards, resource exploration, agriculture and human disease, crop forecasting, or in general areas, such as technology export, led these departments to develop international staffs to expand greatly their transnational relations, and to carry out programs of interest to them outside the United States. It also led them to be concerned about and to seek a voice in the formulation of policies affecting their concerns.

Within the Department of State, some parallel structural changes were made, but relatively modest with regard to the "explosion" of internationally technically-related activities occurring in the rest of the government. Of course, State has changed enormously since pre-world war days and has found itself heavily engaged in issues, particularly in the security area, with important technical aspects. But, by and large, it has continued to give priority in its organization and in its "psyche" to the traditional political relationships, usually country-by-country with which foreign office officials have always been concerned. There are many examples that do not fit this generalization, so that it may be somewhat of an oversimplification, but not much.

In the 1940s and 1950s, atomic energy matters were dealt with through a Special Assistant to the Secretary (S/AE). Later, outer space was added to his responsibilities and, for a brief time, arms control issues. The latter were then taken up by a new quasi-independent arm of State, the Arms Control and Disarmament Agency (ACDA) in the 1960s, while atomic energy and space were transferred to a reorganized science office (Office of International Scientific and Technological Affairs (SCI) which had been recreated in 1958 with science and any other issues that had significant technological aspects. In effect, SCI and its predecessor, were intended to be the science advisers for the Department for all but military issues, and were not barred from involvement there as well. Technical/military questions were to be the responsibility of the Office of Political/Military Affairs (PM), but this role in the technological aspects of military issues was rarely exercised.

The Bureau of Fisheries and Wildlife was created in the 1940's, but it was only in the 1970's that it assumed broad responsibility for ocean affairs issues, largely by transfer from SCI. An office for environmental affairs grew out of an office for water for peace, established under President Johnson to service a major national conference. Population matters were the concern of a Special Assistant to the Secretary.

All of these latter offices: science and technology, ocean affairs, and environmental and population affairs have now been combined in one Bureau of Oceans and International Environmental and Scientific Affairs (OES). It will be headed by an Assistant Secretary of State (none of the earlier offices had an Assistant Secretary as its head, though the Director of SCI was supposed to have

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equivalent rank). The new Bureau was formed in 1974; its first Assistant Secretary, Dixie Lee Ray, took office January 2, 1975.

A major adjunct of the Department with a central role in technology issues in the Agency for International Development (AID). Originally growing out of President Truman's Point IV program for technical assistance, AID continued transfer of technology as a major goal. Today, the Office of Science and Technology in AID remains an important program commitment in the agency, and other offices are heavily involved with technology-related subjects such as nutrition, agricultural innovation, population, and others.

A few other parts of the Department have had more than occasional interest in technology-related issues. One is the Office of Munitions Control which is responsible for control of the export of security-related items, which are very often technological in nature. Another is the Bureau of Intelligence and Research (INR) which conducts in-house and contract studies dealing with the impact of technology. A third is the Policy Planning Staff which, when it has functioned in a policy planning capacity, was more than passingly concerned with the effects of certain technologies on future international developments. A fourth is the U. S. Mission to the U.N. in New York City, and other international organization missions, that must perforce deal extensively with technology since many IO activities are built around technology or raise issues in which technology is a central element. The Bureau of International Organization Affairs (IO) must therefore also be concerned substantially with technology.

The list of State Department offices and bureaus that have to deal with politically-salient technology-related issues could be extended to cover the whole Department though the appreciation of that fact and of its likely intensification in the future remain slim.

The formal relations between the State Department and the scientific community have never been substantial; where they existed, they were primarily with the National Academy of Sciences (NAS). For a number of years, the Department provided a small grant to the NAS to help fund its Office of the Foreign Secretary which provided the formal links between the American scientific community and the international nongovernmental scientific structure —the International Council of Scientific Unions (ICSU). Only very rarely was the NAS solicited for advice, though it has been used formally as the American end of negotiated bilateral scientific exchanges. AID has established operating relations with the NAS and its engineering and medicine counterparts, and has asked for special studies from time to time. But the Department otherwise has had only rare working relationships with the NAS.

Of course the scientists have not refrained from making recommendations and protests to State. In that respect, the NAS and, to a lesser extent, the American Association for the Advancement of Science (AAAS), have functioned as important interest groups with which State has had to be concerned, rather than as working partners or advisers. The role of the NAS and its sister organizations tends to be more substantial as a source of studies and formal advisory committees with many of the technical operating agencies of government.

Two other bodies must also be mentioned in relation to State Department organization for these issue areas. The first, relevant also to relations with scientists, is the now defunct OST in the White House and its predecessor, the Office of the Special Assistant to the President for Science and Technology, which included PSAC in the same structure. When the office was created directly under the President in 1957, it had as one of its concerns the need to strengthen the capability of the government, and particularly the State Department, to deal with technologically related issues of foreign policy.[2] Accordingly, it worked closely with State during the late 1950's and early 1960's on specific issue areas, especially arms control, space, atomic energy, and those military issues with which State was involved. In this function, it often acted, de facto, as science advisers to the Secretary of State. Concurrently, efforts were made by the White House science office to strengthen the policy machinery in State, with the focus on SCI and its predecessor.

This role of OST, and its influence generally, declined in the late 1960's for extraneous reasons; President Nixon, for even more extraneous reasons abolished the office in 1973. There is considerable discussion now about recreating a science office in the White House under President Ford. It could play an important role for State, of which the author writes more later.

The other body deserving brief mention here is the Secretary of State's Advisory Committee on Science and Foreign Affairs created in 1973. This group, including nonscientists as well as scientists, began an active analysis and advisory role, working primarily through SCI, though apparently with considerable interest on the part of senior officials. It had considerable promise as a useful external support for the science office. However, the organizational and personnel changes involved in the creation of OES led to the dissolution of the committee by the new Assistant Secretary Ray.

Thus, there have been several important additions to the U. S. Government structure since

[2]See Skolnikoff, op. cit. for a detailed account.

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World War II that affect the conduct of foreign policy for technologically-related issues, notably the large independent agencies in space and atomic energy, and a reorganized and expanded White House structure. The international technical activities even of older agencies have, however, also made them more substantial participants in the conduct of foreign affairs. State, too, has created new structures to cope with these issues, though it is only in 1974 that the central new piece reached the level of a Bureau headed by an Assistant Secretary. On paper, the State organization could have done a creditable job; in practice it only rarely performed adequately, and that only in very recent years.

SOME ILLUSTRATIVE EXAMPLES

To show the working patterns of this policy structure, and to highlight its strengths and weaknesses, a few examples of specific issues from the past can be useful.

Atoms for Peace

The Atoms for Peace program, particularly that part of it devoted to spreading the acquisition and use of nuclear reactors, began under President Eisenhower as an attempt to balance the military consequences of the hydrogen bomb with the possibilities of beneficial applications. It also was a means of demonstrating continuing U.S. technological leadership and beneficence at the same time. The AEC, initially reluctant on security grounds, soon came around and became its avid promoter.

Very quickly the program became entirely AEC planned and managed, with State providing only necessary diplomatic services. It was not until the mid-1960's after President Johnson's specially-appointed Gilpatric Committee recommended a much more restrictive program because of the dangers of stimulating nuclear proliferation that any real brakes were applied, and then more by AEC agreement with the White House than through State Department intervention.

Working relations between the AEC and State have tended to be good, but primarily on the mechanics of the program, rather than on fundamental issues. Perhaps it would not have been easy in the early 1950's to appreciate the proliferation consequences of the Atoms for Peace program, but later in that decade and early in the 1960's the issues could much more clearly be seen. Still, the important questions were never given serious attention in the policy process. There were several dominant reasons for this:

1. The momentum of an efficient, competent bureaucracy working on esoteric technological subjects that makes it difficult for others to challenge and difficult to formulate reasonable policy alternatives;
2. a business community strongly supporting the program for the economic returns that would be realized;
3. an unusual, even unique, Congressional mobilization of power in the Joint Committee on Atomic Energy (JCAE), that
   a) considered the promotion of nuclear-generated power as a priority objective, and
   b) had established detailed policy control over the AEC to a degree that substantially loosened Executive control over that agency; and
4. general lack of high-level attention in State to the issues that might be raised in the future by the program.

The obvious question is whether a different policy process would have made a difference to the policy outcome. The answer can not be known, but a fair estimate is that it would have by the 1960's at any rate. But a different policy process would imply a weaker JCAE, a more competent State Department, and more studies persuasively pointing out future danger. Some factors in this area were unusual.

The power of the JCAE stemmed from other causes largely irrelevant to this issue, but the result was enormous influence both against the Executive and against Congressional colleagues. Joint committees are an organizational pattern unlikely to be repeated by the Congress (a proposal by Senator Lyndon Johnson for a joint space committee in 1958 received little support), though the power of individual Congressmen or committees in specific issue-areas remains a serious problem for a national policy process. In the atomic energy case, lesser Congressional control would have made possible the exertion of more Executive influence, but until the early 1960's there seemed little inclination to do anything about the Atoms for Peace program even if it were feasible.

Special interest pleading and pressure are of course continuing elements of the American political process. The problem is how to balance them in a way that gives an adequate voice to collective interests; an adequate voice which also would require information and analysis sources to meet the special interests on terms of approximate equality.

The junior-partner quality of the State Department on this subject had a certain inevitability to it for operational matters at least. The AEC had the resources and momentum, the visibility, the Congressional support, the original Presidential initiative, and a dominant position with regard to the

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complex relevant technical information. Though the AEC also played a prominent role in relations with the International Atomic Energy Agency (IAEA), the responsible international agency established by U.S. initiative to be concerned with atomic safeguards, it quite naturally found it difficult to be both a promoter of atomic power and a countervailing force concerned with proliferation.

State was not organized in the 1950's to play this countervailing role and raise the important issues. Even those who were concerned did not have the technical resources to develop options, or the political clout to gain the attention of senior officials able to challenge the AEC. The President's Science Adviser, heavily engaged in military and arms control issues in the late 1950's, did not focus on this relatively low-level operational AEC program, so that no challenge emerged from that source at that time.

In the 1960's the formation of ACDA helped to change the policy process by providing a voice, and resources to back it up, that could raise the appropriate questions. Even then, it was not until direct Presidential interest was aroused by ACDA, the NSC, and PSAC that effective challenges were finally raised in the mid-1960's. By then, the U. S. had contributed substantially to the spread of atomic technology that would make proliferation more feasible.

The gradual reduction in political strength and resources in ACDA since the end of the Johnson Administration, and the only marginal improvement in State Department capabilities in this area has meant continued AEC dominance of atomic energy-related issues. For example, in December 1974, with the first review of the nonproliferation treaty (NPT) due in the spring of 1975, ACDA did not have the internal resources to make a study of some new ideas for regional reprocessing and uranium enrichment facilities that might be useful approaches in the negotiations.

Similarly, the AEC has for so long touted the possible value of peaceful nuclear explosions (PNE's) that the issue has become a serious barrier to the conclusion of a successful NPT. This technology, in the face of poor experimental results, uncertain economic analysis, and serious negative political consequences even if it was useful, has nevertheless been a continuing theme of the AEC. The program was never challenged by others with enough political force. Now, the NPT must allow for the possible use of PNE's which greatly complicates the implementation of a treaty; other countries are using the concept for bargaining purposes; India has publicly justified its own nuclear explosion as a peaceful device; and U.S. denial of the technology is seen as one more form of discrimination in which the nuclear "have" nations are depriving the "have-nots" of a needed technology.

A related series of issues over the last several years raises another question about U.S. Government organization. It has become increasingly evident that nuclear energy questions should be seen not in the context of nuclear energy alone, but in a broader framework of energy as a whole. A growing number of issues about export of uranium enrichment technology have had to be dealt with internationally. But these were always seen as relatively narrow questions; a full range of options in specific cases were never offered because of that limited focus. The policy process was in effect overwhelmed by the combination of a strong bureaucracy and a powerful Congressional committee, while no one in State with sufficient political influence had the interest, resources, or understanding to take a hand.

The recent split of the AEC, and reorganization of the R & D piece (Energy Research & Development Agency—ERDA) to encompass all energy concerns may serve to ameliorate this narrow focus. It will not of its own do much to improve State's capability, however, especially since the first Assistant Secretary for OES will be Dixie Lee Ray, who comes from the Chairmanship of the AEC.

Thus, it can be said that an altered policy process would probably have made a difference in the policy outcomes for international peaceful atomic energy matters. It probably would not have made a difference in the early days of the programs when political objectives, especially those deriving from U.S./U.S.S.R. competition, made any long-term qualms difficult to express; and when the JCAE had such a dramatic influence. But in the early 1960's, opposition to the program and the consideration of policy alternatives by State would have been possible if there were adequate interest in and capability of doing so.

Two other relevant factors must be noted; they will recur in other cases as well. One is the difficulty not only of providing adequate information and analysis on complex technologically-related subjects independent of the proponents, but also of presenting longer-run dangers in convincing analyses that will lead senior officials to be willing to take strong, possibly costly, and often unpopular policy positions. There will always be an inherent weakness in such analyses by comparison with the much greater certainty of the competing positions that can show the benefits in more concrete terms. However, the receptivity to these longer-range technology assessments is growing as the costs of some of the externalities of past technological decisions have become evident. Some would argue that in issues such as nuclear safety and environmental pollution the pendulum has even swung too far.

The balance will never be static. But obviously in a rational adversary political process the dangers and costs in the long-run need to be as adequately

represented as the benefits. The methodology for the long-run assessments is still embryonic, though no matter how refined it becomes, it can never remove the inherent uncertainties of prediction.

The second relevant factor is the importance, and the difficulty of allowing public interest representation in the policy process, especially in areas complicated by security classification. There are at least two aspects to this. The first is how the public sector can obtain adequate information for advocacy purposes. Reliance on former public officials, roughly the present situation, is not adequate, yet there is not enough attention to the need for self-conscious development of information and analysis capabilities that can make more extensive public debate possible on issues as complicated as atomic energy. The other is how public views can adequately be encompassed in the policy process. The environmental impact statement is one approach that might be as successful in this respect, and as contentious, in foreign affairs as domestic.

Space

The space program offers another issue area, with many similar lessons. A few cases from the past can be singled out as illustrative, but once again the overwhelming fact is the degree to which the issue area is dominated by the technical operating agencies.

The space program was born in the heart of the cold war era and quickly became a new arena for competition between the superpowers. Originally growing out of a commitment for a scientific satellite as part of the International Geophysical Year (IGY), the Soviet Union turned their launch of a successful satellite into a propaganda bonanza aimed at validating their claims of military superiority and technological supremacy, both tied to a superior social system. The resulting race saw commitments of immense funds on both sides, with a culmination of sorts in the manned landing on the moon by the United States in 1969 (though it was never clear that the Soviet Union had actually entered that particular race).

All the early civilian space decisions were necessarily colored by this prestige competition, with its many military and political overtones. However, many decisions were taken along the way with other factors entering to varying degrees. Several attempts were made in fact to explore cooperation with the Soviet Union, in part to dampen the costly competition. President Kennedy referred to such a possibility in his inaugural address and asked for a list of possible scientific and technological projects suitable for cooperation to be prepared under the direction of his Special Assistant for Science and Technology, Dr. Jerome Wiesner. Such a list was developed, relying heavily on inputs from operating agencies and tempered by outside suggestions, but with only minor State participation because of lack of competence there to take an active role. The President actually had the proposals with him in his Vienna meeting with Khrushchev in the spring of 1961, but the coolness of that meeting made them inappropriate.

In 1962 President Kennedy responded to the Khrushchev telegram of congratulation for the Glenn orbital flight with acceptance of Khrushchev's proposal for cooperation in space. The development of the detailed proposals was essentially dictated by NASA with only general State Department guidelines, until the omission of some obvious possibilities was corrected by intervention of the White House science office. State simply did not have the means to explore the possible options, so that NASA was in the position of putting forward only those in which it was interested—in this case proposals that did not interfere with its views of what would best serve U.S. interests, of what the Congress would buy or what the Russians would accept, and of what would serve its own organizational objectives. The projects proposed by NASA were all minor forms of collaboration, posing little interference with ongoing programs. They certainly would not have called for the intervention of senior political figures which would have been necessary for any substantial political payoff, or even for the projects to work at all.

The experience was sufficiently disheartening to the President that the next year he called for American/Soviet collaboration on the lunar program without clearing the proposal through the bureaucracy. The proposal, was ignored by the Russians, caused consternation in the U.S. bureaucracy, and resulted in a cut of funds for the Apollo program in the Congress since the primary justification until then had been competition, not cooperation.

The present cooperative U.S./U.S.S.R. program that includes docking of each country's vehicles in space, agreed to in October 1970, was specifically rejected by NASA in 1962 as being technically infeasible. The reversal of position can be explained not only by greater technical proficiency, eight years later, but more persuasively by the reversal of motives. In 1962 NASA saw a cooperative program with the U.S.S.R. as likely to impede their organizational and budgetary objectives; while in the 1970's in a changed international climate NASA realized that a joint program with the Russians would advance NASA's organizational goals.

The various attempts at U.S./U.S.S.R. cooperation in space raise the issue of space collaboration with other countries. Though there is a substantial

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number of cooperative agreements, they are essentially all on a bilateral basis, with only a few exceptions. That is largely the way NASA wanted it to be, resisting attempts at multilateral approaches except when unavoidable. The U.N. was always seen as a forum for negotiation and for establishing very general norms of behavior, but rarely for more substantial functions of management or planning of space systems.

Whether this was the right approach is irrelevant; certainly the alternative options involving the U.N. and how they might have been achieved in ways acceptable to U.S. objectives never received substantial airing in the policy process. The one major example of a program that was turned over to a U.N. agency was the World Weather Watch for which the World Meteorological Organization (WMO) assumed primary responsibility. But that came about as a result of a monumental effort during the first spring and summer of the Kennedy Administration to find initiatives Kennedy could take in his fall speech to the General Assembly. The effort was led from the State Department, but in the end turned up essentially only this program in the space field for the U.N.; the communications satellite program announced at the same time was ultimately made the responsibility of Intelstat, a new international organization outside the U.N.

The pattern continues to this day: the earth resources satellite program (ERS) is headed down a bilateral route by NASA, with only cursory consideration of U.N. involvement in a final system. In this case, the Peaceful Uses of Outer Space Committee of the U.N. is the setting for negotiation of principles of behavior with respect to remote sensing ERS systems. Decisions in that forum with regard to issues such as rights of remote sensing without permission; control of the resulting information and its analysis and dissemination; and operating system management may substantially affect the ability of the United States to operate an ERS system in its preferred way.[3] NASA heads the U.S. delegation to this U.N. Committee, and has the dominant voice in establishing U.S. policy, though in the case of ERS, the DOD and CIA have important inputs because of the overlap in functions with military reconnaissance satellites. The United States is certain not to accept rules of behavior that could restrict its right to operate reconnaissance satellites freely.

Even with regard to collaboration with Western Europe, the pattern is the same. In the crisis days of 1957, when the Russian sputnik seemed to symbolize an enormous threat to the Western world, the rhetoric of political leaders spoke of a new era of European/U.S. cooperation, an unprecedented pooling of resources. The first test could have been a truly joint U.S./Western European space program. It never was seriously put forward as a genuine policy option.

As Europe later struggled to develop its own joint space organizations, ESRO and ELDO (research and launcher development), NASA remained cool to substantial collaboration and help, even though US business might have been in a position to gain from the contracts those organizations would provide. Presumably, the rationale for the position stemmed from NASA's long-standing organizational concern that it had to demonstrate an economic return from space expenditures to protect its future. NASA leadership was concerned that European organizations were likely to be subsidized by their governments and thus might not purchase U.S. hardware, lent that of European competitors instead.

Again, there was a reversal when the space shuttle was proposed. NASA was anxious to commit Europe to responsibility for developing part of the shuttle program as a hedge against domestic attempts to cut it back or out.

This economic motive of payoff from space looms large in the ERS picture, too, as well as in other space applications systems. Bilateral arrangements can more easily be established on a paying basis, with second-order benefits more easily evaluated. Multilateral or U.N. arrangements can easily mask or confuse benefits, and are likely to cost the United States money through contributions even if they also bring income from contracts.

Given this picture of the policies followed in the civilian space program, what can be said about the difference the policy process made in the policy outcomes? Since the output of an alternative process can not be measured, all that can be said with certainty is that the one-sided nature of the process prevented other reasonable options that would serve different foreign policy purposes from being adequately considered.

NASA largely dominated the foreign policy process even without the support, as in the atomic energy case, of an unusually strong Congressional committee, or of concentrated special interest pressure from industry. The Senate and House space committees (Senate Aeronautical and Space Sciences Committee; House Committee on Science and Astronautics) are not powerful committees in either chamber, though the Senate Committee with Senator Lyndon Johnson as chairman in the beginning was an important influence. Their interest has been focused on the domestic impact of the space program, only intermittently on the foreign policy dimension (except for the overriding original interest in space achievement for international prestige purposes).

Industry, and academic scientists, became impor-

[3]See companion paper on space satellite systems for details.

tant interest groups, but with much more attention to hardware and payload considerations than to foreign policy interests. Thus, industry pressure figured only marginally on a few issues, and often indirectly (i.e., NASA's felt need to demonstrate a return to U.S. industry) in the foreign policy process with regard to space.

DOD has also figured substantially in the policy process for space activities, though primarily in those areas in which there is an overlap or interaction between civilian and military programs (communications, meteorology, resources). Close collaboration exists between NASA and DOD on joint hardware development, but various efforts to combine the use of space applications satellite systems —in particular, communications and meteorology —for budgetary reasons have foundered on the strong U.S. commitment to an entirely unclassified civilian space program able to collaborate fully openly with other countries.

Occasionally, DOD and NASA come into conflict on specific foreign issues, most notably on the export of technology. NASA's general stance is to wish to sell space technology abroad to enhance economic returns and to avoid the development of competitors. DOD has been generally skeptical of the export of sophisticated hardware on security grounds. The clashes come to a head most often in the Office of Munitions Control in State, with often inconsistent outcomes. The policy process for export control requires analysis in its own right beyond the scope of this essay.

Clearly, a different process for the conduct of foreign policy in space-related areas could have been possible, and the policy outcomes likely would have shown the effects. The civilian space program under NASA influence consistently emphasized US leadership and control, with strong preference for bilateral arrangements unless a multilateral approach was unavoidable, and a minimum role for the U.N. or for joint U.S./European action. The NASA policy thrust was aided in its consistency by the fact that a single individual has been in charge of the NASA international program since 1959. The result has been an efficient, technically proficient program that did, in fact, achieve the objective, among others, of demonstrating U.S. leadership. But it did not, therefore, serve other possible foreign policy goals, as it might have done.

To establish different policy objectives, and design the program to meet them, would have required much more effective State Department participation in the policy process. In effect, State would have had to take the leadership; in turn that would have required a capability to develop options with enough understanding of the technical factors so that NASA could not simply declare one option technically infeasible, or preempt an option by its own independent actions. This also requires early intervention in program planning, close monitoring of independent foreign contacts of the agency and development of its own, and willingness (and ability) to commit resources to the area. All of that also requires an interest and continuing commitment to the subject on the part of senior State Department officials with substantial political influence.

This level of commitment on the part of State can be managed in a few issue areas, but not in all. The necessarily diffuse nature of its interests ranging across issue areas can not be a match across the board for the depth of interest and resources at the command of technical operating agencies in their own issue areas. That is surely a healthy situation since on the average it is preferable for those with the greatest knowledge to be responsible for efficient program management under general foreign policy guidelines and oversight. But, State must be able to intervene effectively in important areas for more detailed shaping of the foreign policy aspects, and that capability remains inadequate.

Large-scale Actions with Environmental Effects

One of the most serious technological trends affecting man's continued residence on the planet is the development and diffusion of the physical means to alter the environment on a global scale. The knowledge and the capability for doing so have been proliferating rapidly, particularly through the technologies of atomic energy and space. There are policy implications of this situation that are of interest and importance; one is the process in the United States governing the conduct of large-scale experiments and activities with potentially damaging environmental effects. Project Westford was an early example of such an experiment that illustrates a case in which the organization for policy was adequate in bringing out relevant issues, but in which the policy assumptions made the outcome inevitable.

Westford was a military communications experiment proposed by the Lincoln Laboratory at MIT. The idea was to inject a belt of copper filaments into orbit around the earth to serve as tiny reflectors for a passive communications system. In the days prior to active communications satellites, the military felt the need for a secure backup emergency communications system. Project Westford was to test the idea with a limited experiment that would have low density of filaments designed to fall out of orbit after a short period of time.

In expectation of international reaction to the

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experiment, the United States took the unprecedented step of releasing information about the test in advance, along with the scientific calculations about performance, the likely absence of interference with the sciences of optical and radio astronomy, and the orbital lifetime of the filaments. The United States also urged the international scientific community, especially the International Astronomical Union (IAU), to repeat and verify the calculations. The President's science advisor and the Space Sciences Board of the NAS were also involved.

The proposed experiment ran into much opposition from some parts of the scientific community. There was little disagreement with the calculations, but great concern that a successful experiment would lead to a follow-on, denser operational system which might have substantial environmental effects even if the prior experiment did not. In addition, the calculations were based on the dispensing satellite reaching the correct altitude; if it did not, the predictions would be invalid. Considerable opposition was also expressed on the grounds that no nation had the right, especially for its national military purposes, to tamper with the environment in ways that could affect others.

The United States proceeded with the experiment in October 1961, but the filaments did not deploy from their canister and the test was a failure. A later, more successful, launch was achieved in 1963. It is interesting to note that the first test did not have a control provision to prevent launch in case of incorrect altitude; the altitude in fact was wrong and it was purely by luck that the canister failed to work.

As a result of that experience, the United States pledged to submit all such proposed space experiments to a new international body of the scientific community—the Consultative Committee on Potentially Harmful Space Experiments of the ICSU Committee on Space Research (COSPAR)—for discussion prior to launch. The US did not, however, indicate any interest whatever in giving that or any organization veto power over activities the United States wished to carry out for its own national purposes. The only activities submitted to the Consultative Committee since that time have been those that might contaminate extra-terrestrial bodies, an important but politically minor issue.

Internally at the time, President Kennedy pledged a special review by his national security and science assistants before allowing agencies to proceed with any such potentially damaging experiments in the future. This did not involve any routine formal procedure, so that the only experiments reaching that level subsequently were those involving special political visibility such as the Amtchitka underground nuclear explosion.

A different policy process at the time of Westford (1961) would certainly not have made any difference in the policy outcome. In the cold war context, it was inconceivable that the United States would have been willing to forego a security-related program on uncertain environmental grounds when its own calculations indicated the program was safe. In the Amtchitka case a decade later the same factors prevailed, with even more uncertain predictions and greater public visibility. It is hard to believe that a different policy process would have made it possible for other foreign policy objectives—desire to establish international precedents of acceptable behavior, need to deter other countries from similar or worse actions that will be possible as power proliferates, interest in developing an image of international responsibility (to say nothing about the moral right to take unilateral action possibly affecting the global environment)—to prevail over the various security motives. It is also not evident that these other objectives hold much value for any of the participants in the foreign policy process.

In the case of non-military programs, the process is not substantially different except that security as an overriding consideration cannot be used. For the supersonic transport (SST) the Administration was perfectly prepared to proceed in the face of uncertain but believable calculations about environmental dangers from SST operation. In that case, industrial and bureaucratic pressures combined to dictate that policy preference. Once again, it is not evident that the Department of State valued other foreign policy objectives sufficiently to raise serious objections. It appears that State was not even substantially involved; the proponents were largely the President's immediate staff.

For both the SST and Amtchitka, it was Congressional opposition, fueled by public environmental groups, that raised issues for the Administration. The opposition was unsuccessful in the nuclear test, but successful in killing the SST. In both cases, access to data and analysis was essential to being able to mount any effective opposition at all.

A new situation of a similar kind may be brewing now with respect to the space shuttle. Concern has been raised that the exhaust of a substantial number of shuttle launchings will add sufficient chemicals to the upper atmosphere to cause depletion of the earth's ozone layer (the same effect as in SST's). If this appears to be a probable effect, new opposition to the shuttle program is certain to be launched outside the Executive Branch at least. It is possible that NASA and DOD are presently studying this situation. The Department of State, however, is not. Any chance for leadership by that Department on foreign policy grounds will be lost once again. Instead, the issue will emerge as a bureaucratic, scientific, industrial, Executive/Congressional de-

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bate with important, longer-run foreign policy considerations sitting on the sidelines.

Research and Development Allocations

The present Federal budget for R&D is approximately $19 billion. The way that money is spent determines in substantial measure future international changes and what technology is available for US domestic and international purposes in the future. Many factors determine how those funds are allocated, but the motivation for Federal expenditures for more than half the $19 billion are foreign policy in origin: defense, atomic weapons, and space. The remainder goes for areas which in most cases will have important foreign policy implications upon fruition: energy, environment, agriculture, communications, and transportation.

Some important foreign policy-related agencies are involved in the allocation process for those funds, notably DOD, AEC and NASA. One Department is notably absent—the Department of State. Leaving AID aside, and, to a much lesser extent, ACDA, State has essentially no involvement in the R&D allocation process.

The reasons for lack of involvement by State are not hard to find: no R&D program of its own; limited internal technical competence; difficulty of intervening in the complex R&D allocation process of other agencies or of the Government as a whole; legislative restrictions on the expenditures of the funds of other agencies on non-U.S. problems; and traditional assumptions about the role of a foreign office. The trouble is that the intimate interaction between technological development and foreign affairs is now so great that to stand aside from the allocation process dooms the foreign policy official to influence on the consequences, never on the causes. It also denies the nation adequate consideration of foreign policy concerns at the critical initial stages of setting technological objectives since the operating agencies necessarily have limited views of what would best serve U.S. objectives. Examples are easy to cite: relatively little agricultural R&D is devoted to the problems of other countries; energy R&D has consistently been dominated by nuclear energy to the exclusion of alternative sources; technologies appropriate for developing countries have received little attention; the greatest possible accuracy for missiles was assumed to be a natural and unquestionable R&D goal; and so forth.

Whether intervention by State could or should have made a difference in these R&D areas is uncertain. Uninformed intervention could easily be worse than none at all. But, the need is there somehow to see options according to foreign policy goals early enough in the technological development process to try to avoid blind "progress" that ignores important areas or creates more serious problems than it solves.

The need is much easier to state than it is to solve. Some comments and suggestions will be noted later.

Summary of Relevant Factors

The history and examples given in the discussion show a foreign policy process for technologically-related issues largely dominated by the technical operating agencies of government, with the result that an inadequate range of options is usually considered in the process. The examples were chosen from only a few fields; they could be multiplied to many others. In fact, for some of the older agencies with little history of international activity, there is often more independence of action because of the lack of previous bureaucratic contacts with State.

Many factors that led to the current pattern in the policy process were mentioned; a few others are also relevant. A brief summary of those factors is useful since it most clearly defines the needs. (No priority ordering is intended.)

1. Characteristics of the technical operating agencies:

   a. "Monopoly" of information. The technical agencies have an enormous advantage, stemming from their command of the technological information, to develop options that serve their objectives, or to deny the feasibility or existence of options they dislike;

   b. Momentum and initiative. Simply by virtue of the momentum of programs, these agencies can have the advantage of the initiative in policy discussions or can preempt options by initiatives taken in the field;

   c. Efficient, strong bureaucracies. A straightforward technical task, especially if well-funded, can produce efficient, strong bureaucracies hard to deflect from chosen directions;

   d. Industrial support. Agencies designed to serve technological objectives usually have developed substantial special interest support in the economy by virtue of their role in contracting with industry. Industry is also likely to have substantial transnational relationships which can provide information and apply quiet pressure on diplomatic efforts.

   e. Congressional support. Similarly, operating agencies are likely to have a well-defined Congressional constituency since they distribute resources that can be influenced by Congressional preferences;

f. Depth of interest in subject. Operating agencies necessarily have much deeper and more intense interest in their restricted subject area than can a foreign policy agency which must range widely over many subjects and which has different priorities. This also implies greater ability and willingness to commit manpower and other resources on specific issues;

g. International contacts. An operating agency is likely to have a more extensive range of working international contacts in its field than is a foreign policy agency, contacts that may also imply coalitions from different countries on policy questions against their own governments;

h. Continuity of personnel. An operating agency is likely to have greater continuity of personnel working on the international aspects of its programs;

i. Technical competence. A technical agency is likely to command high technical competence, especially if it is working at the forefront of its field.

j. Bureaucratic politics. All agencies engage in bureaucratic politics, but particularly so if survival is at stake. Technical agencies, with restricted responsibilities, are likely to be quite conscious in the setting of program objectives and the consideration of policy options of the need to support their long-range bureautic objectives.

2. Characteristics of the State Department:

a. Diffuse interest. Necessarily the State Department's interests are more diffuse than those of any given technical operating agency so that the resources able to be mobilized for one area will be relatively thin. Coverage becomes difficult, giving the other agencies even greater power of initiative;

b. Priority, geographical organization, and attention. By and large, traditional, geographically-oriented political issues are seen as the gut issues of foreign affairs, with lesser interest and attention accorded to the functional areas. This makes it more difficult to obtain top-level attention, necessary for political clout in interagency negotiations, when the central interests of the other agencies are involved;

c. Conventional wisdom. Even when senior officials are engaged on an issue, the prevailing assumptions and conventional wisdom of the State Department make it difficult for them to perceive the issue in the new political/technological context produced by technology and its side effects, rather than in traditional political terms;

d. Technical competence. The nature of the State Department's functions and prevailing reward structure makes it difficult to attract high-quality technical talent to regular positions, even for limited periods of time. In addition, there are not many who are trained specifically to work at the technology/political interface.

e. Outside contact and advice. The State Department has not traditionally sought detailed involvement and advice outside the Department or outside the Foreign Service. In technologically-related areas, this deprives the Department of the means of obtaining the technical insights it needs to balance the technical agencies on chosen issues. It also deprives it of the benefit of advice and contact that it could not hope to obtain internally. Such outside contact requires inside recipients, however, to be at all meaningful;

f. Leadership. For all these reasons, and others, State finds it difficult to take the initiative or leadership on technologically-related issues. Yet it is just that sense of leadership that is necessary to asserting influence. Leadership also must come from the individuals chosen for key senior positions.

3. Other elements:

a. Dominant political considerations. Whatever the merits of individual issues, there will always be times when some overarching political interests will dominate the policy process, rightly or wrongly. American/Soviet cold war competition is one such example. Severe domestic recession would be another.

b. Congressional organization. The committee structure, giving considerable power in issue areas to a few Congressmen and stimulating a mutually beneficial relationship between operating agency and Congressional interests, will always tend to skew the policy process when Congressional interest is aroused or Congressional interests are affected.

c. Public involvement. The public at large is minimally involved in the foreign policy process in these issue areas, and the scientific and engineering communities as a whole only marginally so. What involvement scientists and engineers have is largely through the technical agencies rather than through State.

d. Lead times, political/technological forecasting. Many issues in technology areas turn on forecasting of both future technical facets of the issue and of their political significance. Often in technological areas a long lead time is critical: issues cannot be left "until better information is at hand"—it may be too late; or the time necessary for technological development and production may require early starts if the technology is to be available in time. But esti-

mation of future needs to justify current action is exceedingly difficult to do well. The embryonic nature of the art complicates the problem of making intelligent foreign policy in these issue areas.

e. Personalities. Clearly individuals in a policy process can make a great difference. The present Secretary of State has a particular style of operation that severely affects the power, influence, and morale of the rest of the Department. At lower levels, individuals willing to cooperate and consult can make a process work much better than those who are always attempting to protect their position or assert their independence. The prestige of an incumbent can also be an important factor in his effectiveness in interagency or intergovernmental negotiations.

Some Suggestions

Obviously, simple changes in the foreign policy process can not overturn the pattern that presently prevails between operating agencies and the State Department. Moreover, for the bulk of the detailed operations of international programs and activities, the dominance of the operating agencies, their technical proficiency, and their sense of responsibility for the task, are essential to effective operation. But, for the determination of program objectives, for the anticipation of future needs, and for adequate consideration of policy options, something better is required.

A few suggestions are all that can be offered, for description is always easier than prescription. A wide range of detailed comments are possible; only a few major points will be made.

1. The State Department can do better. The science office in State has never had the kind of commitment by the leadership that would allow the recruitment of a senior figure who could command the attention both of the Department's senior officials and of other agencies. Notwithstanding the barriers over the years, SCI has made a difference, but nothing compared to what is needed.

A science office in State can never meet technical agency competence at all levels, but it certainly could do so on issues of its choosing if it had the right leadership, top-level support, and internal competence. These are not unrealizable conditions if the will exists.

Dixie Lee Ray comes into a new enlarged Bureau (OES) with, finally, Assistant Secretary status. She may have now both that commitment and support to finally realize the potential of that office. In fact, by now, an undersecretary post for science, environment, population, and oceans could easily be justified as a way of demonstrating the pervasive nature of these issues across the spectrum of State Department interests. It may take such a structural change to commit the leadership of the Department, to break the hold of the geographical domination within the Department, to attract the kind of talent to the Department necessary to function effectively, and to make an impression on Congressional organization for foreign policy.

2. A new kind of openness is required in State, at least in these issue areas, if the Department is to reclaim its influence in foreign policy. As one former official recently put it: "It is hard to raise questions inside government (on issues dominated by the technical agencies), and hard for those outside government to know enough to raise the issues." State needs technical help that it can not attract on a full-time basis; it needs the advance knowledge of problem areas that technical contacts can bring; and it needs the prestige of outside consultants who can force issues to higher levels.

In general, much greater use of consultants, study groups, and similar devices is warranted. In particular, the Advisory Committee on Science and Foreign Affairs set up in 1973 could have helped, both to assist in the development of policy options and in the political process of forcing more attention to these issues at higher political levels.

A revived White House science office could also be an important ally in this process, both to help State relate more effectively to outside expertise, and to be able to engage higher levels of political interest.

3. The desire to see the State Department have the capability to intervene in the process of allocation of Federal R&D resources can never be fully met. But at least a start in that direction can be made.

One element is the strengthened OES described above. Its targets with respect to intervention in the R&D allocation process would have to be carefully chosen, but it could operate in a few areas closely allied to foreign policy concerns, and could operate effectively if it made a serious commitment to attempt to do so. Strong, internal staff and use of outside consultants would be necessary.

A second element is a White House science office. That body, if reestablished by President Ford in some form,[4] would be the key to any serious effort to influence R&D allocations on foreign policy grounds. It could, first, be an essential ally of OES if good working relations were established. Second, in its broader science policy responsibilities, it could inject a constant sensitivity for foreign

[4]E.B. Skolnikoff, H. Brooks, "Science Advice in the White House; Continuation of a Debate," *Science*, January 10, 1975.

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policy and international implications, with the help of OES. This sounds straightforward, but unfortunately the predecessor OST was never able consistently to integrate foreign policy interests into its science policy function. Many foreign policy-related issues were considered, but almost always in obvious military, space, or atomic energy matters. Only very rarely was it able to take adequate account of future international aspects of R&D allocations outside security fields. It ought to be possible, but it is not easy.

One of the key arguments, in fact, for reestablishing a White House science office is its potential role in relating science and technology to the international problems and opportunities the nation faces.

4. Little can be said here about Congressional reorganization, but a greater Congressional cognizance of and involvement in these issues should not require reorganization. Congressional interest is likely to be healthy, in that more questions may be raised about alternative policy options. The danger, of course, is that the substantial parochial pressures on Congress would mean that greater involvement would result in even more support for parochial agency positions.

New Congressional analytical capabilities in the form of the Office of Technology Assessment, the new budget committees, and a proposed policy analysis group, may help to make Congressional interventions better informed and more useful. The odds of that happening are not as high as desirable.

5. Lastly, the need for better information and analysis capabilities in the society at large as well as in the Government (and internationally as well, for that matter) is critical. Technological complexity, the uncertainties associated with technology, and the critical nature of implications of technology for the future require it.

Information is needed for two purposes: objectivity and advocacy. That is, information sources are required that are, and are seen to be, disinterested, as a way of settling disputes in a court of law or a policy process when there is disagreement about a situation and its likely implications.

Information is also needed to make possible the participation by all interested parties in an adversary policy process, when a few of the participants have access to information not available to the others.

Analysis is stressed as well as information, for it is rare that facts are in dispute, but their significance or what the unknown and uncertain facts are likely to be, are usually in dispute. Scientists are as biased in their views of the future as are others (though they are likely to reach agreement more easily than others on known facts), which is why it is never safe to rely on one expert as a policy adviser.

How to achieve these informational and analytic capabilities is a very complex question. New government agencies, universities and think tanks, specially-funded institutions, international scientific groups or academies, consultants, and advisory committees all have roles to play.

For a more effective foreign policy process for technology-related issues, the relatively underrepresented participants—the public, Congress, and the Department of State—need better means than exist at present for acquiring the knowledge necessary for effective participation.

Appendix C: Multilateral Diplomacy

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Introduction

Appendix C includes three papers, prepared independently by Harlan Cleveland, Richard N. Gardner, and Charles W. Yost. Each addresses the problem of how the government should be organized for the conduct of diplomacy in multilateral contexts and formal international organizations. Related papers appear in Appendix B.

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The Management of Multilaterialism

Harlan Cleveland
February 1975

THE ARGUMENT IN BRIEF

1. The management of interdependence is increasingly a multilateral process. Our "foreign policy" is increasingly intertwined with "domestic" policies and economics and social policy—and vice versa.

2. A diplomacy based primarily on bilateral relations would be like "mathematics without the zero". Indeed, most of the content of bilateral relations *between* nations has to do with decisions which must be arrived at in multilateral negotiations *among* nations.

3. Many of the decisions that deeply affect the destiny of our nation and people can only be reached in multilateral negotiations. Among the functions that will have to be handled mostly multilaterally are peacekeeping, nuclear safeguards, the policing of terrorism, planetary bargaining on energy, food, population, commodities, "aid", monitoring and protecting the global environment, the control of weather forecasting and modification, the allocation of frequencies and orbital arcs in space, the regulation of international business, including development of a world central bank, the direct management of ocean resources in and under international waters, and the anticipation of new kinds of conflict and cooperation.

4. Despite the imperatives of interdependence and multilateralism, U.S. foreign policy is managed on two assumptions quite inconsistent with them. The government is divided between "domestic" and "foreign" policy making, up to and including the White House staff. And the management of "foreign affairs" is heavily weighted toward the administration of bilateral relations with individual nations.

5. The arrangements under the National Security Act of 1947 for channeling coordinated advice to the President have proved one-third workable. Crisis management and big-power strategy have been handled through National Security Council "machinery", not usually through the Council as such but through the Assistant to the President and his staff. But a review system was never developed to constrain the abuse of "national security" as a justification for unconstitutional behavior by government officials. And the NSC left largely unattended to the "interdependence functions" (energy-food-population-minerals-environment-oceans-trade-money-economics-science-technology), most of which have only recently become the subjects of global politics.

6. A useful distinction can be made between the political-security-intelligence area and these newer "interdependence functions". The NSC should be focused on the former; the Secretary of State should serve as its Vice Chairman and direct its staff; the position of Assistant to the President for National Security Affairs can be abolished.

An Interdependence Council chaired by the President should supersede the Domestic Council; it should be supported by a strong analytical staff and led by a full-time senior Presidential assistant as Vice Chairman. The new Council would deliberately look both ways: encouraging the "domestic" departments and agencies to think about America's international role and encouraging "foreign affairs" elements of the government to help enhance the capacity of Americans to cope with interdependence. Because its functions so directly engage the President's personal and political leadership, the Interdependence Council would have to be managed from the White House.

7. The whole government leadership will necessarily be engaged in the practice of interdependence politics; the director of multilateral diplomacy will be the President. The Secretary of State must be both Presidential deputy for international negotiations and chief advocate for an international viewpoint in internal policy formation. For this double function he needs a true alter ego, who

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should be the only Deputy Secretary who also has Cabinet rank.

Within the Department of State:

- Two "line" Undersecretaries, one for "national and one for "interdependence" functions, are indicated.
- Some of the "interdependence" functions will have to expand; the purely bilateral-relations functions can be contracted at the same time.
- An active "stable" of half a dozen Ambassadors at Large, to manage complex long-lasting negotiations, will be required.

8. The need for a wide range of competencies, and for more attention to the "interdependence functions" and multilateral processes, should lead naturally to revised attitudes about career development, funding, training, and communications in the Foreign Service system.

9. The partnership with Congress on foreign policy, ruptured during the Johnson and Nixon Administrations, needs to be reactivated. Part of the solution is for the Executive to consult early and often; but Congress needs to organize to make its side of the conversation equally interesting. For example:

- Congressional leaders might be made members of the National Security Council, with arrangements to avoid bypassing NSC.
- Congress might establish a Joint Committee on Interdependence, which could consider broader and longer-range strategies than the regular committee structure seems able to handle.
- Congress should create, or cause to be created, an independent staff of policy analysts working for the Congress as a whole.

10. The imperatives of interdependence and multilateralism will require a new kind of peacetime political leadership, able (as in wartime) to mobilize whole populations to act in ways that make it possible for their government to engage with other nations in "collective self-reliance".

I. A MULTILATERAL WORLD

The management of international cooperation now takes primarily multilateral forms. This is partly because so many notionally "sovereign" countries must be taken into account even in regional or narrow functional issues.

The number of sovereignties has come to be so large (more than 150 "countries" in all, of which 138 are members of the United Nations) that dealing bilaterally with each of them would just be much too complicated. A diplomacy built on bilateral relations would be like "mathematics without the zero". For example, sixteen NATO nations would require 120 bilateral discussions to reach the consensus that can be reached in one multilateral gathering.

Moreover, the much advertised polycentric trends—the proliferation of powerful weapons, the emergence of the U.S.S.R. as a super power, the economic miracles in Japan and Germany, the success in self-reliance of China, the beginning of unity in Western Europe, the development of an oil cartel that works, the convergence of the developing countries as a force in world politics, the inability of the United States to sustain the dollar as the world's key currency—have produced a world in which no one nation or even a group of nations is "in charge". Several or many nations and other international "actors" such as multinational corporations are vitally interested in all American foreign policy movements and in public policy decisions we would earlier have styled "domestic affairs". And we are necessarily interested in theirs as well.

It is true that there is an enormous amount of bilateral conversation between pairs of countries all over the world, and we have bilateral relations, in one form or another, with every nation in the world today. (Those that we do not "recognize", such as Cuba, Albania, Outer Mongolia, North Viet-Nam and North Korea, our government deals with in various ways anyhow.) But an analysis of the content of these bilateral relations reveals that most of the subjects being discussed are scheduled for decision, not between the two countries conducting the bilateral conversation but in some multilateral public process—a UN agency, the North Atlantic Treaty Organization, the Organization for Economic Cooperation and Development, the Organization of American States, the European Economic Community, the International Atomic Energy Agency, the negotiations in Vienna on Mutual and Balanced Force Reductions, the European Security Conference, the international conferences and consultations on environment, population, food, and ocean law, the International Energy Agency, the World Bank, the International Monetary Fund, international agreements on fishing, the weather, and outer space, etc. If the venue is not in an intergovernmental process such as these, it may be in a voluntary association, a multinational business, the international science or academic community, an international church organization, or the like.

In the late '60s, when I had occasion to visit every US mission in NATO Europe, I made a point of asking what proportion of the business on each Ambassador's desk was strictly bilateral business, and

what proportion was essentially bilateral conversation about business done multilaterally. My estimate at the time was that the multilateral content of bilateral diplomacy ranged between 60–75%; now, half a decade later, the average is probably at the high end of that range. Some idea of the pervasiveness of multilateral processes can be derived from the sheer numbers of meetings held each year. The United States Government was officially represented at 740 international conferences last year, and several thousand private international meetings engaged the attention and attendance of private American organizations.

II. THE INTERDEPENDENCE FUNCTIONS

In consequence, nearly every American institution of any size or significance is already partly international. The communications media operate all over the world, and one of the major common carriers is now an international communications satellite company. One-seventh of the world's gross product is accounted for by multinational corporations, more of them based in the United States than in any other country; together their internal transactions account for one-fifth of "international trade". The trade union movement has not yet found effective ways to internationalize itself, and therefore finds dealing with multinational business a bafflement and a frustration. Non-profit organizations, foundations, service organizations such as the YMCA and YWCA, and church-based missionary movements have all in some degree had to internationalize their foreign operations, bringing non-Americans on to their governing boards, hiring non-Americans to handle their overseas functions, and generally moving to a post-colonial mode of operation. Our educational systems are increasingly preoccupied with finding ways to express in their organization and in their curricula the realities of interdependence.

At the government level, every "domestic" government agency is "into" foreign affairs. Actions of the US Department of Agriculture are among the most important decisions made about world food supply. The Federal Aviation Agency has a web of transnational relationships to make global air travel possible. The efforts of Federal energy agencies to conserve fuel and encourage alternatives to imported oil are the essential ingredient in what the US and OECD countries can accomplish in negotiating with the OPEC cartel. The Environmental Protection Agency finds many forms of pollution require international cooperation to monitor and control.

Even in the so-called "old line" Departments, the interdependence functions are of growing importance—Justice's immigration controls are part of the world population problem, Commerce is one of two global headquarters for the World Weather Watch (the other is in Moscow), Interior's functions include such exterior issues as policy about oil, gas and coal, and a live interest in ocean fishing rights. It is noticeable, however, that the agencies handling the newer functions of government tend to reflect more interdependence; programs dealing with world weather, ocean management and arms control are current examples.

It is hard to know whether the *proportion* of governmental decisions which must be taken in league with other nations is growing, when measured against the growth in all governmental functions. The total of all "public" decisions is certainly growing very fast, at all levels of decision-making from neighborhood to global. But we are concerned here with the *absolute* increase in the amount of government business that must be conducted, even by a comparatively self-reliant society such as ours, through systems of "collective self-reliance". These include types of decisions that used to be regarded as the essence of national sovereignty, such as regulation of the money supply.

III. AGENDA FOR "COLLECTIVE SELF-RELIANCE"

The functions that will have to be handled by multilateral arrangements—ranging from parallel national actions through treaties and conventions to international organizations with planning and executive functions—make an impressive list:

Ensure Peace and Security

- appoint and command observation teams and flexible emergency peacekeeping forces, negotiate and monitor arms control agreements, and supervise international trade in armaments.
- make rules for safeguarding fissionable materials and disposing of radioactive wastes, in a world where a dozen nations now, and two or more dozen soon, will know how to convert their nuclear fuel into nuclear warheads.
- coordinate the international policing of drug abuse, criminal conspiracy, hijacking and terrorism—as the miniaturizing of high explosives puts more power in the hands of guerrilla groups and individual desperadoes.

Manage Planetary Bargaining

- Facilitate the policy negotiations and carry out the practical agreements involving the price

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and supply of energy, the production, distribution and reserve-stocking of food, the stabilization of commodity markets, limitation of population growth rates, and a "post-patronizing" development aid from richer to poorer peoples.

- Monitor and protect the common environment, developing both rules to limit damage and also incentives to enhance our physical surroundings: one major upcoming issue will be how to regulate the power to modify the weather at human command.
- Control new kinds of international traffic, such as sonic interference, remote sensing technologies, and the use of frequencies and orbital arcs in space.

Regulate Money and Business

- Manage the negotiation of agreements about trade, investment, development and money—a function that penetrates deeply into the formerly "domestic affairs" of every nation.
- Create some kind of world central bank to do what the US tried to do as long as the dollar was the world's "key currency"—keep the supply of money growing fast enough for world development needs and spread the costs and benefits of inflation fairly among the nations.
- Regulate the behavior of multinational enterprises, to help reconcile their private and national purposes with their public and international responsibilities.

Directly Manage Ocean Resources

As nearly everyone is vaguely aware by now, the oceans are man's last and greatest frontier on earth. They cover about two-thirds of the earth's surface; there are vast uncharted areas of the seabed, with mountains twice as high as Everest; there may be as much oil, gas, copper, nickel, cobalt, manganese under water as there is on land; the table varieties of fish we now enjoy and require could vanish in a decade without new conservation measures; the oceans offer a vast potential for floating cities, man-made islands, and new transportation systems; they could also become a giant irreversible "cesspool" if not prudently managed.

What is lacking—and seems unlikely to emerge from this year's complex negotiations about the Law of the Sea—is a common international perspective about this great and largely unexplored commons. Most of it does not, by any stretch of nationalist imagination, "belong" to any nation.

The nations will therefore have to arrange, for example, community services to license and police mining and drilling operations on the deep seabed, using the royalties for other international purposes; to research new sources of energy from the oceans; and to develop the seas not just for hunting seafood but for growing protein and providing new kinds of recreation in marine parks.

Anticipate New Kinds of Conflict and Cooperation

There is an acute need for long-range professional analysis of international futures, from an international point of view, to catch problems before they become insoluble by peaceful means, to identify new technologies which will need to be channeled and controlled by new institutions to human rather than anti-human purposes. Some of these will be the consequence of developments in the biological sciences, which look to be every bit as revolutionary as the industrial/nuclear/electronics upheaval we are not quite used to yet.

IV. TWO OBSOLETE ASSUMPTIONS

The pervasive trends toward *interdependence* and *multilateralism* are no longer in dispute; some would say they are perfectly obvious. Yet the organization of our Federal Government for the management of international affairs is still based on two settled assumptions which are quite inconsistent with the facts of international life:

1. The US Government is unambiguously divided between "domestic" and "foreign" affairs. To paraphrase Gilbert and Sullivan, every matter of public policy is born a little "domestic policy" or a little "foreign policy" and is so treated throughout the governmental decision process.

One of the most elementary notions in public administration is that a supervisory office should not be organized in the same way as its subordinate offices, that, indeed, it should be deliberately organized to cut across the vertical divisions below, in order to throw new light on their interrelationships and inconsistencies before issues come to the top executive for "decision" (which can mean resolution of differences or confirmation of a consensus already reached among subordinates). The Cabinet Departments were established to deal either with national security/foreign policy matters, or with "domestic policy". Yet the White House is organized the same way, grouping the national security functions in an NSC process under the National Security Act of 1947, and grouping the rest of the government under a Domestic Council, the lineal successor of functions performed by staff officers under a variety of names ever since the Truman Administration.

It is therefore quite literally true that the only person hired to coordinate domestic and foreign policies is the President of the United States.

Since the system does not fit the function, one

would expect repeated instances of dissonance between foreign and domestic policies, and these are frequently exposed on the front pages of our newspapers. Recent grotesque examples have been the public differences about food policy between the Secretary of State and the Secretary of Agriculture before and during the World Food Conference in Rome and Secretary Kissinger's efforts to develop an international energy policy among the oil consuming countries (as prerequisite to negotiations with the oil producing countries), followed by a full year's delay in the President's proposals to Congress for a US energy policy to match.

2. The management of "foreign affairs" is heavily weighted toward the administration of bilateral relations with other nations. In State Department organization, in personnel selection and promotion, in the allocation of "prestige posts", in policy processes, and in internal clearance arrangements, bilateralism is still king.

Again, dozens of examples could be cited of the trouble this causes. Because most of the talent is thinking and working on bilateral relations, officials concerned with foreign policy have been mostly unavailable to grapple effectively with the US defense budget, CIA operations, energy, population or food. The growing traffic in "conventional" (but increasingly sophisticated) arms is still treated as an aspect of getting along with individual countries and improving our balance of payments, rather than as a dangerous problem in itself. The Law of the Sea negotiators are effectively responsible to a task force at the middle Civil Service level, and have difficulty getting top-level attention for the very far-reaching policy questions involved in that complex exercise. Planning for major world conferences (Stockholm on Environment, Bucharest on population, Rome on food, the Special UN Assembly on a "New International Economic Order") tends to be late and ragged. Except for the more traditional kinds of strategic analysis involved in big-power pentagonal politics, which was handled primarily in the White House until Dr. Kissinger moved over to the State Department, there is not nearly enough room in the foreign policy establishment for strategic long-range planning, especially on the widening range of "interdependence issues".

V. LIMITATIONS OF THE NSC

The National Security Act of 1947 was intended to assure the coordination of advice to the President on everything that deals with "national security". It has been one-third successful. The National Security Council and its White House staff have not been able to limit the abuse of "national security" as a justification for unjustified actions. Nor have they focused much high-level attention on "interdependence policy" in such interrelated and inherently international matters as energy, food, population, mineral resources, oceans, environment, trade, money, inflation, unemployment, scientific invention and technology assessment. Where the NSC system has operated (not always astutely, of course) is in the area of defense, diplomacy and intelligence.

Crisis management and big-power strategy have especially been handled through the "NSC machinery", which in practice has mostly meant the NSC staff in the White House, working with State, Defense, and to a more limited extent the Central Intelligence Agency, through "task forces" and ad hoc groups. The National Security Council itself has met from time to time in non-emergency times to ratify the staff work below; but it is hard to find a record of the Council as such being called into session to advise a President in an emergency. Nevertheless, as a device for reconciling the political and defense aspects of U.S. foreign policy, the 1947 Act can be said to have served its purpose.

It did not work at all, as the Watergate imbroglio demonstrated, in defining the limits of "national security" as a justification for domestic actions. Indeed, practices grew up in the name of "national security", some of them prior to the Nixon Administration, which placed sizeable chunks of the public business beyond the reach of constitutional checks and balances. (The high-water mark of the "national security" claim was reached in John Ehrlichman's testimony before the Senate Watergate Committee, when he seemed to be telling the Committee that the President has the power to do what he has to do if the national security is at stake—the requirements of national security being determined in secret by the President. Questioned as to where a line might be drawn beyond which the President could not go—did his power extend to murder, for example?—Mr. Ehrlichman's reply was not much help: "I do not know where the line is, Senator.") The NSC machinery did not in practice put a bridle on the power of the President to abuse his power by adducing secret national-security reasons for executive actions that would be deemed inappropriate by the voters if they knew what was going on.[1]

Both the preoccupation with crisis management and big-power strategy, and the tendency to handle "national security" matters in smallish in-groups, have left the "interdependence functions" unattended to. The relevant "domestic" agencies, ex-

[1]Prescribing for this disease would go well beyond the purpose of this paper. Some concrete suggestions for fencing in the abuse of Presidential power can be found in Harlan Cleveland and Stuart Gerry Brown, *The Limits of Obsession*, prepared for a consultation with the Senate Watergate Committee staff at the Center for the Study of Democratic Institutions, Santa Barbara, California, December 3, 1973.

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cept for Treasury, are not even NSC members. The Domestic Council has had such jurisdiction as is exercised; the Council on International Economic Policy (CIEP) has never been effective; and in recent times the White House special assistant for International Trade Negotiations (STR) has actually been subordinated to the assistant responsible for the Domestic Council. When the United States Government suddenly decided to limit the export of soybeans, Tokyo's shock was matched by the surprise of the State Department.

VI. AN INTERDEPENDENCE COUNCIL

There *is* a valid distinction to be made between the functions actually coordinated through the NSC machinery, and the "interdependence functions". Political-security affairs, including intelligence, cost upwards of $100 billion a year and constitute a quite large enough task for one system of policy making to manage.

In its management, we have arrived by the accident of personalities at the arrangement which has long commended itself to some students of U.S. government organization for the management of foreign affairs.[2] Dr. Kissinger is the President's deputy for such management. What remains is to make clear that this Presidential-deputy function resides in the Secretary of State. This can readily be done by abolishing the position of Assistant for National Security Affairs in the White House, and melding the NSC staff with the "seventh-floor" planning functions in the Department of State.

For the "interdependence functions", which reach so deeply into domestic economic and social policy, and into domestic politics, the coordination must be even more closely related to the President's office. But the blurring of "domestic" and "international" distinctions, the need to make policy with a clear grasp of both, argues for abolishing the Domestic Council and establishing in its stead, in the White House, an Interdependence Council (or some other name that makes clear the need for a creative balance between internal and external policies). The new Council would be essentially a Cabinet committee, but with the Secretaries of State and Defense joining their "domestic" colleagues in the coordination process.

It would be crucially important to entrust the leadership of this reorganized Council to a vice chairman (the President serving as chairman, as he does in the National Security Council) who in his person reflects a lively interest in and concern with *both* international and domestic policy. For this task, the management of American policy in its relationship to world affairs and international institutions, there are three options:

1. The President could designate the Vice President as vice chairman of the Interdependence Council. Under current conditions this might seem the logical move, since Vice President Rockefeller has both the domestic and international experience to provide the requisite leadership. But any President would probably conclude that it would be constitutionally unwise to delegate so central an Executive function as a continuing responsibility of the only other elected official in the Executive Branch. The vice chairman, in addition to his professional and political qualifications, should be clearly the President's man (or woman), acting with as much of a "passion for anonymity" as is possible in a mass-media society, acting always in the President's name, and removable at the President's discretion.

2. The President could designate the Secretary of the Treasury, traditionally the senior "domestic" Cabinet member. There is some precedent for this option: in the legislation to carry out the Bretton Woods agreements, the National Advisory Council which was supposed to supervise U.S. relationships with the World Bank and the International Monetary Fund was to be chaired by the Secretary of the Treasury. (The NAC has in practice slipped into disuse.) In the Nixon Administration, moreover, Secretary Schultz was given a "super-Cabinet" position with line responsibility for much of the government's economic and financial policy-making.

3. The third option is for the President to designate a senior Special Assistant, a person with deep understanding of the international dimensions of American economic and social policy and an equal appreciation of the constraints and workings of American politics, to serve full time as vice chairman of the Interdependence Council supported by a competent analytical staff in the Executive Office of the President. Since the interdependence functions are perforce so closely tied to the President's personal leadership, the high-level Special Assistant would probably be regarded as the best option by any President inclined to assume personal leadership of the process by which America reaches its destiny decisions in the complex environment of interdependence.

VII. ORGANIZATION OF THE STATE DEPARTMENT

Every Government agency would need to rethink its own organization and review its own staffing to adjust to a government-wide assumption that American policy is going to be made in the full light of its international implications.

[2]See, for example, "Memo for the New Secretary of State", *The New York Times Magazine*, December 11, 1960.

The impact of interdependence is no longer something to be relegated to an Office of International Relations that enables the rest of a "domestic" agency to assume that the international implications are being taken care of by somebody else. From now on, the Cabinet and subcabinet officers in each Department and agency will be playing personal roles on a world stage, explaining U.S. policy and absorbing international criticism and advice directly, not filtered through the State Department. More and more of these contacts will be in and through multilateral agencies. Multilateral diplomacy has grown far beyond the dimension that can supposedly be coordinated for the whole government by one of thirteen Assistant Secretaries of State. In the U.S. Government of the future, the director of multi-lateral diplomacy is the President of the United States.

The President's deputy for this increasingly important function is once again the Secretary of State. He is the ranking American negotiator in an increasingly multilateral decision process. He is also the ranking advocate at the Cabinet level of the need to take into account in American "domestic" decisions the feelings, interests, power and decisions of non-Americans. The problem is, the Secretary cannot be personally in both places at once.

The need is for a Deputy Secretary of State who is not only qualified to be the Secretary's alter ego, but who is so regarded at home and abroad. He or she must be able to deal with Foreign Ministers at their level, and during the Secretary's frequent absences to deal as the President's deputy with the Cabinet level in the U.S. Government. The formal arrangement to accomplish this is quite simple: confer Cabinet rank on the Deputy Secretary as well. In future, the selection of a Secretary of State should result from a successful search for a team of two persons, either of whom would be qualified from the outset to be the Secretary of State—because they will both have to perform the Secretary's functions.

At the level next below the two-person Secretary of State, the organization of the State Department might best reflect the distinction between "national security" and "interdependence" functions. Since both the Secretary and the Deputy Secretary have to spend most of their time in negotiations, foreign and domestic, and in ceremonial activity, the two chief Undersecretaries of State should (unlike the present Undersecretaries) have line responsibility. One would supervise all the functions that support the Secretary's function as Presidential deputy for the coordination of national security affairs. The other would supervise the interdependence functions, which penetrate deeply into U.S. economic policy and domestic politics; here the State Department's double task is to represent—with articulate political voices based on professional staffwork that understands both the international and the domestic considerations—the U.S. interest in building an international system of world order that works.

A number of the interdependence functions, such as oceans, environment, trade-and-money, will soon require Bureau status. If this unduly proliferates the number of Assistant Secretaries of State (there have been about a baker's dozen, depending on how they are counted, for more than a decade), the regional bureaus and the Bureau of International Organization Affairs can be grouped under a smaller number of subcabinet appointees; they are vital as liaison offices with field missions, but not a primary source of staffwork on broad issues of national security policy or interdependence strategy.

The task of thinking hard about multilateral institution-building—for example, the development of a framework for bargaining between oil consumers and producers, or the politics of setting up a system of world food reserves, or the invention of a world central bank for multilateral management of the money supply—can no longer be squeezed into one IO Bureau. It should, indeed, be a daily preoccupation of the Undersecretary for the "interdependence functions" and a weekly concern to the Secretary and the President and the Cabinet level in the functional Departments too.

The complex multiple negotiations that lie ahead of us will require a high-level group of experienced and knowledgeable negotiators at the service of the President, the Secretary of State, and the Deputy Secretary of State. The title of Ambassador-at-Large has already been developed for this function; and such positions have been occupied by a number of distinguished Americans.

Just now, negotiations with a number of other countries, and simultaneously with Congress and non-governmental interests such as multinational corporations, labor organizations, and other interest groups, are in train on the law of the sea, monetary and trade arrangements, food, oil, a "new international economic order", arms control, and a good many less headline-grabbing topics. This is not an unusual buildup of high-level diplomatic business in the mid-1970's; it should be regarded as a minimum measure of the simultaneous political bargaining which will have to be handled at any one time by American representatives who have understanding and experience of both domestic interests and international relations.

The maintenance of an active "stable" of at least half a dozen Ambassadors-at-large will be required to manage United States participation in complex, long-lasting negotiations to adapt and invent the institutions of international interdependence.

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VIII. A PERSONNEL SYSTEM TO MATCH

The personnel system required for the diplomatic establishment of the future will have to deviate in significant ways from a Foreign Service system designed to staff bilateral political missions and provide opportunities to achieve an Ambassadorship before retirement. The State Department will have to develop a high competence in each of the major substantive fields likely to be important in an environment of multilateral interdependence. Some of the characteristics of an improved personnel system can be suggested:

- Foreign-policy officers who prefer the policy process in Washington to the representation function abroad should not be discriminated against.
- By the same token, specialized language officers (who have taken the time and trouble, for example, to learn Chinese) and persons with special competence in (for example) monetary diplomacy should be given full opportunity for advancement to top positions.
- Careers in multilateral diplomacy will be a larger and larger part of the system; they should not be regarded as exceptions to a "normal" career in bilateral diplomacy.
- To enable impecunious people (from inside or outside the career service) to serve as Ambassadors and high-level negotiators, Congress should recognize the need for generous "protocol funds". The quality of staff at the U.S. Mission to the United Nations has certainly suffered from the chintzy policy on allowances there.
- A broad and vigorous program of exchanges should be promoted between policy officers in the State Department and the "domestic" agencies with important interdependence functions (Agriculture, Interior, Commerce, HEW, EPA, FEA, etc., etc.), since senior staff on both sides of the blurred foreign-domestic line must understand how it looks on the other side.
- Overseas, at bilateral missions and especially at multi-lateral posts and in major multilateral negotiations, there should be no ambiguity about who is representing the President. All communications should be handled technically in one channel, that is, Washington agencies can address cables to "their" field people but not in secret channels to which the chief of mission has no access. The principle for all concerned is this: "If I don't want the President—or the President's overall field representative in this area or on this subject—to know about this message, there may be something wrong with the idea of sending it."

IX. GETTING CONGRESS BACK IN THE ACT

An American interdependence policy, pursued by multilateral process, will also require adjustments in the Executive's partnership with Congress. The breakdown of this partnership during the past decade reflects both the chronic reluctance of the Executive to consult for real, and the chronic reluctance of the Congress to organize itself to force the Executive to consult for real.

Consultation by the President and his political executives has always been made difficult by the inherent inequality between a unitary executive and a collective body, no Member of which can speak with assurance for his colleagues. During the Johnson and Nixon Administrations, the normally sticky separation-of-powers relationship decreed by the Constitution became an almost unbridgeable gulf for a combination of reasons:

- A preoccupation with secrecy shaded over into a very widespread assumption in policy-making that (a) the fewer the people who know, the greater the security, and that (b) only those should know who "need to know". The trouble with these doctrines is that the crucial determinations—who is in the know and who is not—are made by the first possessor of the secret, on his unreviewed judgment about what "national security" requires. The doctrines turned out to be progressively more corruptible. A reluctance to consult with Congress (or even with Executive Branch colleagues likely to oppose an action) could readily be covered up by deciding that Congress (or another part of the Executive Branch) did not "need to know" about the issue and was therefore automatically excluded from participating in the policy discussion.
- Public disagreements on basic policies, especially the war in Vietnam, caused a breakdown in the personal relationships between the two Presidents, both of whom had served in both houses of Congress, and key members of the legislative branch, such as the Chairman of the Senate Foreign Relations Committee.
- Members of Congress have traditionally been reluctant to challenge the President on war-and-peace issues, especially if such a challenge could be interpreted as "softness". Cases in point were the Gulf of Tonkin Resolution of 1964, which gave President Johnson a blank check to escalate the war in Vietnam, and the repeated defeat of the "Mansfield Resolutions" to reduce American troop strength in NATO Europe.
- Neither House of Congress has been able to

mobilize enough first-rate policy analysts to compete in the same league with Executive Branch systems analysts and policy thinkers.[3]

Part of the problem is inherent in the nature of collective leadership. Individual Members of Congress are reluctant to delegate their political discretion either "upward" to their more senior colleagues or "downward" to whiz-kid staffers. Particularly is this true on issues of war and peace and the interdependence issues which might deeply affect the lives and livelihood of their own constituents.

Yet it is now more than ever important that Congress somehow get back in the act of advising about and consenting to American foreign policy. It is important precisely because the new-style interdependence issues are so heavy with domestic repercussions—the oil crisis is felt directly at the filling station, the global inflation is perceived in the supermarket, the food crisis may result in significant dietary changes—and are therefore bound to be issues in "local" politics. If the American people need to cooperate at home for the U.S. government to be effective abroad, then the sine qua non of an interdependence policy is that the people's representatives should be cut in on the destiny decisions.

Without going all the way back to the dictatorial ways of Speaker Joe Cannon, there are at least three things that Congress can do to reflect in its operations the twin imperatives of interdependence and multilateralism:

1. In "national security" matters the President's obligation to consult with Congress should probably be formalized. In recent times the initiative in such consultation, and the decisions about which bits and pieces of classified information to select and reveal to Members of Congress, rest wholly with the Executive. Congressional leaders have usually been brought in after the President has already decided what to do; sometimes the consultation has occurred only a few hours or even a few minutes before the President goes on national television with a policy pronouncement. The problem is to get Congressional leaders in on the act before the President makes up his mind.

One device would be to provide, by amendment to the National Security Act of 1947, that designated leaders of the two Houses of Congress (for example, the Majority and Minority Leaders of the Senate and the Speaker and Minority Leader of the House of Representatives, or other Members appointed by those leaders for a particular consultation) would serve as members of the National Security Council. To prevent the Executive from bypassing the NSC in order to bypass the Members of Congress, the amendment might also provide that on certain classes of decisions (such as the despatch of troops to, or the use of armed force against, a foreign land where such action is not authorized by prior multilateral agreement such as the North Atlantic Treaty) the President must convene and seek the advice of NSC members. He cannot and should not be bound to accept it.

The congressional leaders would presumably want to meet regularly with Members whose committee assignments enabled them to become experts in national security and foreign policy matters. Since the function of NSC is advisory only, Congressional membership need not be seen as compromising the separation of powers; there are precedents of Presidential commissions and other national commissions (including the one to which this paper is addressed) that have included members designated by the Senate and the House of Representatives.[4]

2. Congress should consider establishing a Joint Committee on Interdependence, to serve as the opposite number of the White House-based Interdependence Council. Here there are several models already, the Joint Committees on the Economic Report and on Atomic Energy, which date back to the late 1940s, and the recent arrangement for a Committee on the Budget.

The interdependence issues, which are handled internationally in multi-lateral processes, obviously cut across the traditional jurisdictions of Congressional committees, just as they cut across the responsibilities of existing Executive departments—and of existing international organizations. Congress had just as much notice of the need for a national energy policy as the President did, but there was apparently no way in which a legislative leader or group could develop a package to consider as a Congressional alternative to the President's program—even though the latter was al-

[3]Joseph A. Califano, Jr., once President Johnson's Special Assistant for Domestic Affairs, pointed out that the "separate but unequal branch" of the Government had four computers, compared to the four thousand computers available to the Executive. "The Pentagon, both within its own walls as well as in its think tanks like RAND and the Institute for Defense Analysis, can war-game any number of strategic or budgetary alternatives, while the Armed Services and Foreign Affairs Committees still base most of their decisions on the work of small staffs and the gut reactions and empirical idiosyncracies of committee members. . . . The executive branch is by far the most significant force in the conception, development, and enactment into legislation of new substantive programs. The stark fact is that neither the Congress nor any of its committees has the consistent capability —without almost total reliance on the informational and analytical resources of the executive branch—of developing coherent, large-scale Federal programs." Cited in Harlan Cleveland, *The Future Executive*, (New York: Harper & Row, 1972), page 42.

[4]This recommendation is adapted from *The Limits of Obsession*, referred to above.

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ready a year late when it finally emerged from the Executive. A standing committee with explicit responsibility for analyzing such cut-across issues and making policy recommendations thereon need not unduly violate the authorization and appropriation functions of the regular committees of the two houses. But it might give them something of Congressional origin to work with and to compare with proposals from the Executive.

3. Congress should maintain a staff of policy analysts working for the Congress as a whole. To support the leadership consultations at the White House, the leaders would need an expert staff to help them independently analyze the relevant security information and contribute usefully to the policy discussions with the President and other members of the National Security Council. To support the work of the Joint Committee on Interdependence, a staff of policy analysts, able to handle a great diversity of subject-matter, follow a number of important multilateral negotiations at once, and write about (for example) world energy, food *triage* and petrodollar recycling in plain English for the use of laymen-legislators, would likewise be needed.

From time to time suggestions have been advanced for the establishment of an independent Institute for the Congress, gathering first-rate people with training and experience in universities, executive agencies, Congressional committee staffs, and in elective and appointive office, to serve Congress as a whole with thoroughly nonpartisan and professional staffwork on major issues which every Member will have to understand, or handle without understanding. Maybe this is an idea whose time has come.

X. A SPECIAL KIND OF LEADERSHIP

The implications of a proposal to make ready the United States of America for continuous multilateral negotiation, in an uncompromisingly interdependent world, are very far-reaching. They transcend the responsibilities of the Departments, of the White House, and of Congress. They imply changes of purpose and priorities in higher education, in research and development, in business management, in the orientation of trade unions, in the communications media with their global reach, and in voluntary agencies with their grass roots base. Analysis of all the new requirements to enable Americans to cope with interdependence is beyond the scope of this paper but not beyond the scope of a reorganized foreign policy which depends for its very existence on the active collaboration of a whole nation of individualistic Americans.[5]

The necessity to make so many public policy decisions in international ways, in consultation or agreement with other nations and anational enterprises, and the fact that these "interdependence issues" reach deeply into the "domestic" affairs of our own and other nations, require a special kind of leadership. In the days of the Marshall Plan, for example, the decisive actions required to meet an international crisis were essentially taken by a relatively few legislative and executive leaders. But the chronic crisis of interdependence, of which the facets called energy and food are in evidence just now, requires actions by dozens of government agencies, thousands of private institutions, and millions of householders and automobile owners. The head of the new Energy Research and Development Administration, Dr. Robert Seamans, said it very simply on his first day in office: "Federal planning for conservation will be difficult because the main work has to be done at the state, local, and personal level."

The style of national governance required in these circumstances is more akin to wartime leadership, engaging the cooperation of whole populations to take "domestic" actions without which the requisite international cooperation cannot be arranged by even the most skillful diplomats. Such leadership goes far beyond the capacity to guide legislation through the labyrinth of enactment, to the capacity to educate whole populations that modern interdependence and national security require changes in attitudes, assumptions, life styles, and workways—and to elicit millions of willing actions, more or less voluntary, backed up by the market economy, social pressure, public shame, and only at the margin by governmental enforcement.

[5]This question is currently under review by a National Commission on Coping with Interdependence, recently organized at the suggestion of the State Department by the Aspen Institute for Humanistic Studies, under the chairmanship of Robert O. Anderson.

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Foreign Policymaking in a New Era—the Challenge of Multilateral Diplomacy

Richard N. Gardner
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There are many possible ways to organize the United States government for the conduct of foreign policy. The choice among them will be influenced by the personalities of the President and his principal collaborators, but it should also reflect the nation's basic foreign policy priorities.

The ultimate objective of United States foreign policy is to promote the "life, liberty and pursuit of happiness" of the American people. It is increasingly clear that this objective can only be achieved in an international environment congenial to American interests. At the end of the Second World War, the United States sought to promote such an environment by creating an institutionalized world order based on the United Nations, the Bretton Woods organizations and General Agreement on Tariffs and Trade (GATT). With the onset of the Cold War, the focus of American foreign policy became the creation of a new balance of power to contain the Soviet Union and Communist China. In the thirty years since World War II, "balance of power politics" and "world order politics" have contended for supremacy in U.S. foreign policymaking, with the former steadily gaining ground over the latter.

The capacity of the United States government to promote the "life, liberty and pursuit of happiness" of the American people still requires the maintenance of a power balance. But the greatest threat to our future security and welfare lies in the disintegration of the international order. We talk of a "structure of peace," yet seldom in history have so many existing structures fallen apart. The United Nations system of collective security has broken down, the Bretton Woods financial system has broken down, the GATT system of open and nondiscriminatory trade has broken down, the established arrangements for supplying the world's food and energy needs have broken down, the traditional law of the sea has broken down, and essential arrangements for population control and environmental protection have yet to be created.

As the world enters the last quarter of the twentieth century, it is more than ever necessary for the United States to re-examine its foreign policy priorities. In this decisive quarter century, the survival of human civilization as we have known it will depend on mankind's capacity to fashion a new international order—specifically, on improved international arrangements to cope with such interrelated problems as population, food, environment, energy, mass poverty, unemployment, inflation and depression, social and political instability, proliferating nuclear and conventional weapons and escalating terrorism and international conflict.

The collapse of the international order cannot be blamed on the United States or any single nation or group of nations. The clash of ideologies, the multiplication of sovereign states, the intensification of nationalism, the drastic changes in the economic balance, the revolutionary changes in science and technology—these developments have combined to shatter the old order before we have been able to build a new one. The United States has been neglectful of "world order politics," but the record of most other countries has been as bad or worse.

Yet the responsibility of the United States is a special one. Viet Nam and "covert operations" notwithstanding, the concept of a community of nations working within a framework of law to promote security, welfare and human rights is an important part of the American tradition. The U.S. contribution—political, economic, scientific and managerial—remains absolutely essential to the building of a global order. The creation of new international structures to replace the collapsing old ones will be impossible in the absence of United States leadership.

The recommendations that follow are based on the premise that the central preoccupation of

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United States foreign policy from now on must be the building of effective international machinery to manage mankind's common problems. Unfortunately, in a divided world of competitive nation-states, we cannot dispense entirely with "balance of power politics" in favor of "world order politics." But we will need to demonstrate the same degree of commitment to "world order politics" that we have demonstrated to "balance of power politics" if we are to have any hope that the latter will one day prove unnecessary.

A commitment of this kind has been notably lacking in recent Administrations, both Republican and Democratic, despite much use of "world order" rhetoric. U.S. foreign policy has favored short-term considerations over long-term interests, bilateral diplomacy over multilateral institution-building, and political and military responses over economic and functional cooperation. To mention but one example of distorted priorities, we spent millions of lives and billions of dollars in defense of "national security" in Viet Nam, while neglecting the much greater threat to national security from our growing dependence on Middle East oil.

The suggestions in this paper for reforming Executive Branch foreign policy-making arrangements are designed for a new era of international institution-building to give mankind a safe passage into the twenty-first century. In this new era the President, the Secretary of State and the heads of the major executive departments will need to give continuing attention to a range of neglected institutional questions:

1. What international problems (e.g., access to supplies, inflation/depression, the spread of nuclear capabilities, direct broadcasting from satellites) require new or strengthened international rules and institutions?
2. In developing such rules and institutions, which countries are the appropriate participants (e.g., how do we strike a balance between universality and effectiveness)?
3. What voting and other decision-making arrangements are needed to take account of national sovereignty and of the differing capabilities of members to implement decisions?
4. What are the best methods for creating and revising international rules (e.g., can we make greater use of independent experts in place of highly politicized international conferences)?
5. What are the best arrangements for interpreting the international rules (International Court of Justice, specialized tribunals, mediation, fact-finding, etc.)?
6. What rewards and punishments can be used to secure compliance from parties to international agreements and to encourage necessary cooperation from non-parties?
7. How do we assure a better coordination of the proliferating number of regional and functional bodies?
8. What can be done to improve the administration of international institutions and enhance the efficiency and independence of the international staff?
9. How can the United States concert its policy more effectively on multilateral issues with its Atlantic and Pacific allies, with its former enemies in Moscow and Peking, with the new financial powers in the OPEC group, and with the countries of the developing world?

The proposals in this paper are based on the assumption that the President, the Secretary of State and the heads of the main executive departments will regard these as important questions whose solution is vital to the survival of the United States. If that assumption is correct, the recommendations that follow can make a difference; if it is not, they will be quite irrelevant.

I. BASIC ELEMENTS IN EXECUTIVE BRANCH LEADERSHIP

Since the Second World War, the United States has tried three main approaches to organizing the Executive Branch for the making of foreign policy.

One approach has been to put the main responsibility for the making of foreign policy in the hands of the President's National Security Adviser. This system, employed from 1969 to 1973, facilitated some significant breakthroughs in bilateral diplomacy. But it concentrated vast power in the White House in the hands of one individual, limited the accountability to Congress of key foreign policy decision-makers, and undermined the effectiveness of the Department of State. It seems particularly inappropriate for an era in which economic and functional questions will share the center of the diplomatic stage with political and security questions. No one individual can handle all of these questions and assure a fair balancing of the viewpoints of all interested Executive agencies and domestic interest groups.

A second approach has been to combine in one man the offices of Secretary of State and National Security Adviser. This arrangement, as we are currently witnessing, has the advantage of giving the State Department a powerful leadership role and of assuring accountability to Congress. But it concentrates even more power in one person. It may be imperfectly suited to an era of multilateral diplomacy, when the President will need strong inputs from other Executive Departments, particularly on economic and functional questions.

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A third approach has been to combine a strong Secretary of State with one or more individuals in the White House performing tasks of interdepartmental coordination. This system, employed during the Truman and Eisenhower Administrations, may avoid the pitfalls of the other two, but it carries the risk of conflict between the White House staff and the State Department and uncertainty as to the respective functions of both.

Looking toward the future, and bearing in mind that these arrangements must inevitably be tailored to the President's personality and operating style, the following may be a useful compromise between the second and third approaches:

1. Continue the present system under which the Secretary of State serves also as the President's National Security Adviser, but restrict the scope of the NSC to political-military issues.

2. For all other aspects of foreign policy, employ a series of ad hoc groups chaired by the Secretary of State, with responsibility for relating these groups to one another and to relevant aspects of "domestic" policy vested in a senior member of the White House staff outside the NSC mechanism.

There are signs that the Executive Branch may already be moving in the direction of such a compromise arrangement. In contrast to several years ago, the NSC is no longer used for the coordination of policy in economic and functional areas. The Council for International Economic Policy, established in 1971, has fallen into disuse, for the very good reason that different issues in foreign economic policy require different groups of people to deal with them. What we now see emerging are a number of interdepartmental groups to deal with specific questions—an "international energy review group," and "international food review group," etc.

For this system to work effectively, there should be a senior member of the White House staff with responsibility for relating these international functional activities both to one another and to United States domestic policies. In effect, this position would be the counterpart to the National Security Adviser, and might be called Assistant to the President for Economic and Multilateral Affairs. It would not be desirable to have this function performed by the Secretary of the Treasury, as was the case in the early 1970s, or by any other cabinet officer; that would "tilt" policy too much in the direction of an executive department with strong domestic interests. The individual should have an exclusively White House role so that he can serve as a disinterested coordinator of the ad hoc international groups with the interdepartmental councils outside the NSC (Economic Policy Council, Domestic Council, etc.).

The compromise proposed above is designed to establish the Department of State as the "lead" agency for the making and execution of foreign policy, while recognizing that "foreign policy" today has many functional components (e.g., energy, food, money) which are inextricably bound up with domestic policy. That is why it gives the Secretary of State control of the NSC machinery but restricts that machinery to political and security matters. Other foreign policy questions would be dealt with by interdepartmental groups chaired by the Secretary of State and coordinated by a senior White House assistant with responsibilities in the domestic area.

Three Special Problems

Three special problems arise in any attempt to assert the State Department's role as the "lead" agency in the field of foreign economic policy: the State-Treasury relationship, the Agency for International Development (AID), and the Office of the President's Special Trade Representative (STR).

Close and harmonious relations between State and Treasury are clearly essential. In addition, the time has come for one admittedly controversial change in their respective responsibilities. The Treasury Department is not only in charge of United States participation in the International Monetary Fund but also of United States participation in the International Bank for Reconstruction and Development, the International Development Association, and other international development institutions such as the Asian Development Bank and the Inter-American Development Bank. Recently, the Treasury took the initiative in creating a new IMF/IBRD Development Committee composed of 20 Finance Ministers. Given the central importance of economic development to United States foreign policy, it would seem more appropriate to confine the Treasury's role to participation in the IMF, transferring to State the responsibility for managing United States participation in all institutions concerned with economic development assistance, including the IBRD and the new Development Committee.

A further step in the centralization of responsibility for multilateral development activity would be the abolition of the Agency for International Development. The maintenance of AID as a separate entity within the Executive Branch could be justified at a time when the United States was carrying on a substantial bilateral aid program backed by strong Congressional and public support. That time has obviously passed, and there are powerful international as well as domestic reasons for transferring all U.S. development assistance through multilateral institutions. To the extent that the United States maintains a bilateral aid program for political

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and security reasons, it can best be administered by those parts of the government responsible for the promotion of those interests. If AID were abolished, its responsibilities for bilateral aid could be transferred to the regional bureaus of the Department of State, and its backstopping of OECD/DAC and of UN technical aid programs could be transferred to State's Bureau of International Organization Affairs, as suggested in the following section.

A case can also be made for transferring from STR to State the responsibility for managing U.S. trade negotiations and participation in GATT. However, the Congress has repeatedly made it clear that it does not trust the Department of State to carry on trade negotiations. The maintenance of STR is a better option than vesting this responsibility in Commerce or Treasury, since these agencies would tend to conduct negotiations with primary regard to domestic concerns and with inadequate attention to U.S. interests in the development of strong international trade institutions. A more effective State-STR partnership could be established, however, through some of the recommendations which follow relating to the Geneva Mission and a new personnel system.

II. THE DEPARTMENT OF STATE

At the risk of repetition, it should be emphasized again that the new kind of foreign policy called for at the beginning of this paper requires a strong Secretary of State who considers the building of multilateral machinery for the management of global problems a central task of U.S. foreign policy. Without a leader totally committed to multilateralism in deed as well as word, willing to delegate complex tasks of institution-building to outstanding subordinates, the Department of State will not be able to play its proper role as the lead agency for the U.S. government in the construction of a better world order.

If this condition is fulfilled, there are a number of organizational changes that could substantially improve the performance of the Department of State. Of all these changes, the most important is to create a better arrangement for the direction of multilateral policymaking on the seventh floor of the Department. The Secretary of State, however committed he may be to the multilateral approach, will have to spend much of his time on crisis management and on relations with Congress and the press. The Deputy Secretary will bear a heavy burden of managing the Department. What is needed, therefore, is sustained leadership for "world order business" at the Under Secretary level.

To achieve this leadership, some have proposed the creation of an Under Secretary of State for Multilateral Affairs to work on the seventh floor alongside the Under Secretary for Political Affairs and the Under Secretary for Economic Affairs. This proposal has the merit of simplicity, but it runs counter to the central objective of building multilateralism into the political and economic arms of U.S. foreign policy. Much of our international political effort is, and more of it ought to be, carried out through multilateral institutions such as NATO, OAS and the UN. Much of our foreign economic policy is, and more of it ought to be, carried out through multilateral institutions such as OECD, GATT and the agencies of the UN system. An Under Secretary for Multilateral Affairs would be outside the central stream of decision-making supervised by the other Under Secretaries. Given the close relation between bilateral and multilateral affairs, he would be constantly involved in insoluble jurisdictional disputes.

A better way of achieving leadership at the Under Secretary level would be to assign responsibility for multilateral political and military affairs to the Under Secretary for Political Affairs and responsibility for all the rest of multilateral activity to the Under Secretary for Economic Affairs. It may be argued that existing arrangements tend to approximate this objective, but this is really not the case. The political Under Secretary does not have responsibility for developing an overall U.S. strategy toward conflict management through NATO, OAS, and the UN. The economic Under Secretary does not have responsibility for all the multilateral economic areas (development aid as well as finance and trade) or for all the related multilateral functional areas (energy, food, environment, population, oceans, science and technology).

What is here proposed, therefore, is that the Under Secretary for Political Affairs, in addition to his existing responsibilities, should have an explicit mandate to oversee and coordinate the work of the multilateral political divisions of the Department (IO/UNP, EUR/RPM, and ARA/USOAS), while the Under Secretary for Economic Affairs, in addition to supervising the work of the EB bureau, should have explicit authority to oversee and coordinate all the other work of IO, of EUR/RPE, of ARA/ECP, and of the new Bureau of Oceans, Environment and Science (OES). In addition, and this is of central importance, the Under Secretary for Economic Affairs would inherit the responsibilities of the Administrator of AID.

It must be admitted that this proposal concentrates enormous power and responsibility in the economic Under Secretary, but this seems unavoidable if the Department of State, and the whole U.S. Government, is to develop a coherent policy in all the different functional areas which are increasingly linked in international negotiations. The issues of money, trade, investment and development are in-

creasingly related to one another and are now related in turn to those of food, energy, environment, oceans, science and technology. This seems obvious enough to be a cliché—yet it is not yet reflected in U.S. policy-making. To take two recent examples, the U.S. delegation to the Bucharest Conference was not well prepared to deal with population in its larger development context, and the U.S. positions in the Law of the Sea Conference do not take sufficient account of the enormous significance that revenue-sharing from seabed exploitation of oil and hard minerals could have for the future of the international development system.

To exercise the new responsibilities here proposed, the political and economic Under Secretaries should each have a special assistant for multilateral affairs with the responsibility for insuring that the substantive policies and institutional arrangements proposed by the various State Department bureaus and by other federal agencies are mutually consistent and serving a coherent long-term strategy for international order.

The political and economic Under Secretaries should be invested with the further responsibility of serving as the alter egos of the Secretary of State in dealing with other federal agencies in the multilateral as well as the bilateral areas of their respective concern. Where necessary they would chair the NSC and other mechanisms for the coordination of Executive Branch policy in place of the Secretary of State and they would be encouraged to deal directly with the President in place of the Secretary of State when he was unavailable. A formal Executive Order, coupled with an apopropriate White House announcement, would help dramatize this new commitment to multilateralism and would make these senior positions more attractive for men of outstanding talent.

Finally, as part of these new "seventh floor" arrangements, it would be desirable to change the name of the Under Secretary of State for Economic Affairs to Under Secretary of State for Economic and Multilateral Affairs, in recognition of his new and broader responsibilities for subjects like energy, food, environment, population, oceans and science. It would help the new Under Secretary to discharge these varied responsibilities with other government departments if he were elevated to the number three position in the Department of State ahead of the Under Secretary for Political Affairs who now outranks him. It may seem a small point, but the Under Secretary of State for Economic Affairs was the third-ranking officer of the Department for most of the postwar period until very recently. The elevation of the new Under Secretary for Economic and Multilateral Affairs to third place in the Department's hierarchy would help to manifest our new concern with this vital area of international affairs.

The Bureau of International Organization Affairs

These new arrangements at the Under Secretary level would not in any way reduce the importance of the Bureau of International Organization Affairs. Quite the contrary, IO's position has deteriorated over the years partly because it has not had the political "clout" to assert the multilateral interest at the highest levels of decision-making. Under the arrangements here proposed, it would have two "champions" on the seventh floor who could work for better multilateral policies not only in the State Department but throughout the Federal Government.

To be sure, some foreign governments manage to dispense with any equivalent of our Bureau of International Organization Affairs, but these are mostly governments that tend to view multilateral institutions as having little importance—as marginal adjuncts to bilateral diplomacy. The weight of these countries in international institutions is not as great as that of the United States, whose political, economic, scientific and intellectual input is usually crucial for the success of any multilateral enterprise. Nor do these countries have any real commitment to make "world order business" a central element in their foreign policy.

Given the special place of the United States in the international institutional system, there is need of a central place in the Department of State which can (1) determine, in cooperation with other appropriate bureaus and agencies, the day-to-day U.S. policies in international institutions (outside the special regional institutions within the purview of EUR and ARA), (2) decide upon U.S. participation in international programs and conferences and on the level of U.S. contributions, (3) assure that U.S. foreign policy is conducted in harmony with the requirements of the UN Charter and other multilateral commitments and programs, (4) review and evaluate the effectiveness of international organizations and develop a coherent long-term U.S. strategy for strengthening them, and (5) serve as a focal point for communicating with U.S. delegations to international organizations and conferences and assure that the U.S. government speaks in them with one voice. Without a Bureau of International Organization Affairs, it is hard to see how these essential functions could be effectively performed.

One obstacle to the effective performance of IO's role at the present time is the dispersal of authority between IO and AID for U.S. participation in the multilateral development activities of the UN system. With the abolition of AID, responsibility for multilateral development programs would be transferred to IO and responsibility for bilateral aid to the regional bureaus. If, as suggested earlier, State

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were also to assume Treasury's responsibilities for managing U.S. participation in the IBRD/IDA and the Regional Development Banks, IO would be the logical place to exercise these functions, working in close cooperation with EB and the regional bureaus. At last there would be one central place in the U.S. Government where policy could be shaped on all varieties of multilateral development assistance—technical aid, pre-investment aid and the transfer of capital on concessional terms. The function of coordinating U.S. policy in international development institutions, which the Congress assigned last year to AID, would henceforth be performed in IO.

In recent years, it must be admitted, IO has had a declining role in the shaping of policy on substantive issues. On the majority of items at issue in the UN system, disarmament, the Middle East, trade, development, food, environment, population or oceans, IO has become mainly a procedural channel to communicate policies established elsewhere. This is in contrast to the situation that existed at key periods in the '40s, '50s and '60s, when the Bureau was able to shape U.S. policy with special regard to U.S. interests in international institution-building.

Clearly IO must look to the regional and functional bureaus of the State Department and to other Executive agencies for the primary input into most of the items that come before the General Assembly, the Security Council, ECOSOC, the Specialized Agencies, and other parts of the UN system. What IO can and should do, however, is to review and adapt these policies in the light of overall U.S. interests in the development of more effective international institutions.

The decision made several years ago to establish Agency Directorates in IO for specialized areas of UN activity was a step toward more effective policy-making, since it did away with the artificial separation that previously existed between responsibility for UN agency programs in the Office of Economic and Social Affairs (OES) and responsibility for UN agency budgets in the Office of International Administration (OIA).[1] But for the system of Agency Directorates to work effectively, these key positions must be filled by people who combine technical competence in the specialized area with an understanding of multilateral diplomacy. The practice of seconding people from other Executive Departments for these positions satisfies the former requirement, but only rarely the latter. Foreign service officers, on the other hand, are rarely suitable for these assignments; even if they are skilled in multilateral diplomacy, they seldom have the required expertise in agriculture, health, narcotics, science, etc. The more rational organizational structure which IO now has needs to be complemented by a much more fundamental reform to provide personnel with both specialized knowledge and multilateral competence. A proposal to this end is presented in the last section of this paper.

[1]The present organization chart for IOA is appended as Annex 1.

Developing a Long-Term Strategy for Multilateral Institutions

Long-term planning on the kind of institutional questions identified in the introduction of this paper is not now taking place anywhere in the U.S. Government. Institution-building is approached ad hoc in each functional or regional context, with little regard to possible interrelationships. The organizational breakthrough represented by the new International Energy Agency could have important implications for other international agencies, but these are not being seriously examined in IO. The Inter-Agency Task Force on the Law of the Sea spent months considering rules of procedure for the Law of the Sea Conference that might put a brake on the automatic majority of the "77" until someone recalled the "conciliation" formula developed at UNCTAD I. Without some central place for the accumulation of experience and wisdom on multilateral procedures and institutions, those preparing for each specialized event are likely to go on "re-inventing the wheel."

To perform the necessary long-term planning and overview function for the development of international institutions, there should be a small group of highly qualified specialists working together in the Policy Planning Staff (S/P) and IO. Since the necessary competence in international organization affairs will seldom be found within the foreign service, outstanding experts in this area from the academic and professional communities should be brought to S/P and IO on 2–4 year assignments. In addition, the Department should be given funds to contract out for research in this area to universities and research centers. It is absurd that the Defense Department should be able to spend vast sums for research on weapons systems and strategic problems while the Department of State has virtually no money for research on the organization of peace and the management of interdependence.

Greater use should also be made of part-time consultants, but not through the traditional device of appointing an Advisory Panel on International Organizations. Such standing groups tend to be easy targets for political patronage. Moreover, no one group is likely to be adequate for all the different problem areas. The Department should mobilize one team of outside experts to help it prepare for the September 1975 General Assembly reviewing UN economic institutions; another for the re-

form of GATT in connection with the new trade negotiations; still another to consider the appropriate structure of an International Seabed Authority. The necessary continuity and coordination of policy among the various consulting groups can be assured by the full-time specialists in S/P and IO who ought to be collaborating with all of them.

III. UNITED STATES MISSIONS AND CONFERENCES

Whatever reforms are carried out in Washington, the United States Government will not be meeting the challenges of multilateral diplomacy unless it makes some basic improvements in the "delivery system"—U.S. missions to international organizations, U.S. delegations to international conferences, and the handling of multilateral issues by U.S. country missions.

Missions to International Organizations

The most important of all the U.S. multilateral missions is the U.S. Mission to the United Nations. Little more than a decade ago, the five Ambassadorial posts at USUN were occupied by Adlai Stevenson, Francis Plimpton, Charles Yost, Philip Klutznick and Jonathan Bingham. Stevenson, of course, was a man of world stature, but it is also significant that all four of his top associates brought exceptional professional qualifications to their assignments. It is no reflection on those who have occupied these posts in subsequent years to state the simple fact that a similar concentration of talent has not been assembled since.

One frequently debated question is whether or not the United States Ambassador to the United Nations should be a national political figure. A good case can be made on both sides of this argument. There are undoubted advantages in having a UN Ambassador who can telephone the President at will, command headlines with his statements on world affairs, and force the reconsideration of major policies by the threat of resignation. On the other hand, someone with his own national constituency may be tempted to run "a second State Department" in New York and to ignore or even sabotage policy directives emanating from Washington.

It is doubtful that this question can be answered in the abstract. It will certainly help if the Ambassador to the United Nations has "political clout," but it is even more important that he be a solid professional with substantive knowledge in the main areas of UN activity. A U.S. Ambassador who has to turn to a staff member for advice before he can respond to an argument made during a Washington policy conference, a visit with a foreign diplomat, or an attack on U.S. policy in a UN debate, will not be able to provide the kind of leadership in support of stronger multilateral institutions that is now required. Moreover, whatever the background of the U.S. Ambassador to the United Nations, he must be willing to serve as a loyal member of the U.S. Government team, fighting hard if necessary to shape or change his instructions but prepared to carry them out when a policy decision goes against him.

One of the most serious deficiencies of the U.S. Mission to the United Nations is its lack of competence in economics and other important specialized areas. It is paradoxical that these "non-political" subjects now account for half the items before the General Assembly, most of the items before subordinate UN bodies and a preponderance of the work of the Secretariat, yet of the five Ambassadorial appointees at the U.S. Mission there has seldom been more than one at any given time with a solid academic background or practical experience in these subjects, and sometimes there has been none at all. In view of the increasing prominence of economic and functional issues in the work of the United Nations, this kind of competence should be a major factor in the choice of the United States Permanent Representative and the other four Ambassadorial appointees.

What has just been said about professional qualifications at the top level of USUN also applies at the staff level. In recent years men who had spent ten years or more specializing in UN work have left the Mission, to be replaced by Foreign Service officers on 2–4 year assignments. With a few notable exceptions, the decline in competence and commitment at USUN has been alarming. Service with the Mission is rarely an asset in the career of a Foreign Service officer, and the expense of living in New York imposes a heavy financial burden (though this has been somewhat eased by the recent decision to grant housing allowances). To make matters worse, USUN has been obliged to reduce its staff in response to budgetary economies at a time when the variety and complexity of the items on the UN agenda are greater than ever.[2]

To give just one example of what the present staffing pattern means, USUN now has only four officers assisting the Ambassador to the Economic and Social Council to cover trade, development, food, energy, environment, population, the law of the sea, science and technology, and U.S. interests in the UNDP and other voluntary funds to which the U.S. makes major contributions. These officers

[2]The trend in USUN budgets and staffing is set forth in Annex 2.

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spend much of their time trying to satisfy the General Accounting Office that U.S. contributions to the UN are well spent.

With the decline in both the quality and quantity of personnel at USUN, it is not surprising that the Mission has made a smaller and smaller contribution to the making of policy. In matters as diverse as disarmament, outer space, environment, and the law of the sea, USUN has been reduced to a transmission belt for decisions made in Washington.

The situation is even more discouraging at the U.S. Mission to the European headquarters of the United Nations in Geneva. For years the Geneva Mission has been treated as a second-rate foreign service assignment, or, even worse, as a resting ground for the politically deserving. Yet more and more parts of the UN Secretariat have been located in Geneva, and the conference schedule there is even more crowded than the one in New York.

With the passage of the Trade Act of 1974, attention is now being given to establishing another U.S. Ambassador in Geneva to handle the multilateral trade negotiations following the practice that was employed during the Kennedy Round. But creating a separate Mission in Geneva to deal with trade negotiations will only make it harder to build up the quality of the regular Geneva Mission. It will also create serious jurisdictional conflicts, for the regular Geneva Mission is supposed to deal with UNCTAD and ECE, as well as ongoing GATT problems. The next round of trade negotiations will cover a much broader field than the trade negotiations of the past, ranging broadly beyond tariffs into non-tariff barriers, commodity problems and access to supplies. This will make it even harder to separate the activities of the Mission in charge of trade negotiations from those of the regular Mission responsible for the UN economic agencies. For all these reasons, the United States would do well to follow the practice of most major foreign governments, who head their Geneva Missions with men of substantive competence and employ them both for trade negotiations and general UN business.

Special importance should also be attached to strengthening the U.S. Mission to the OECD in Paris and the U.S. Mission to the European Communities in Brussels. The Paris post is now more important than ever, in view of the initiatives recently undertaken among the industrialized countries to deal with the energy crisis.

It is sometimes argued that U.S. missions to international organizations are unimportant because significant business is handled by high-level officials from Washington and other capitals. There is no doubt that international organizations tend to be more effective when they bring together the people in national governments who have the power to take policy decisions and see that they are carried out. Nevertheless, it would be a serious mistake to treat the heads of U.S. missions to multilateral agencies as glorified hotel-keepers and airport-greeters. The national interest in multilateral diplomacy requires that we have outstanding representatives maintaining good relations with other delegations and with the international Secretariat. This is essential if the high-level meetings of people from capitals are to be well-prepared and effectively followed up.

One vitally important area in which U.S. missions to international agencies are not adequately performing their tasks is the recruitment of qualified people for the international Secretariat. Time after time U.S. interests have suffered as a result of unfortunate personnel decisions by the UN Secretary-General on programs of major interest to the United States. Much more attention needs to be paid to personnel questions by our Ambassadors in New York and Geneva and by senior officials in the Department of State. The issue is not just one of promoting qualified Americans for international posts but of working with other governments to see that better candidates from all countries are made available so that the management of essential multilateral programs is put in capable hands.

In view of the national interest in more effective international institutions, a much more systematic effort is needed to identify key positions in the Secretariats where vacancies will occur—and the qualified persons from the academic, scientific, professional and business worlds who can step into these assignments. Preparations for filling vacancies should be made months and even years in advance. Otherwise the United States will become more and more dependent on Foreign Service Officers to fill such posts. There is a particular need to attract more qualified young people and women into UN service. An important step forward would be the creation of a UN Fellowship Program, in which a small number of outstanding young people could be recruited by worldwide competitive examination.

Another notable failure in U.S. multilateral diplomacy is reflected in the disarray of the non-Communist industrialized nations in the United Nations on issues such as the Middle East and the New International Economic Order. To be sure, the North Atlantic nations and Japan frequently perceive their national interests on these subjects differently; nevertheless, more could be done in forums like NATO and OECD to harmonize positions in the global forums, both on matters of substance and on administrative and budgetary questions. It is a sad state of affairs that the twenty countries accounting for two-thirds of the world's GNP and two-thirds of the UN's budget should so often act at cross-purposes, while the nearly 100

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developing countries work together as a potent bloc.

Delegations to International Conferences

Also neglected in the "delivery system" for multilateral diplomacy are the U.S. delegations to international conferences. Given the importance of the global agenda and the difficulty of mobilizing support for U.S. positions, every delegation member should be able to function effectively as a member of the U.S. team. Yet this is seldom the case. In recent years, for example, the public members of U.S. delegations to the United Nations General Assembly have often lacked professional qualifications or have been absent for much of the session. U.S. representation on the Sixth (Legal) Committee of the General Assembly has been a notable victim of this practice—we repeat our commitment to the "rule of law," yet there has hardly been a General Assembly in the last twenty years in which the United States has been represented by a distinguished jurist. Under both parties, the White House has used delegations for easy political rewards. This has hampered the U.S. performance, not only in the General Assembly, but in meetings of the Specialized Agencies and in specialized UN conferences like the Stockholm Conference on the Human Environment.

If we are serious about our commitment to the strengthening of multilateral institutions, the President should appoint the public members to delegations on a merit basis. Nominations should be made by the Department of State in consultation with other executive agencies and, where appropriate, with business, labor, scientific and academic groups. Members of the delegation to the UN General Assembly should be named three to six months in advance of each Assembly, so that they can prepare themselves with the help of USUN and the Department of State. In some years, public members have been appointed only a few days before the opening of an Assembly; in one case, an appointment was actually made after an Assembly was already underway.

United States Country Missions

United States policy in multilateral institutions cannot be effective unless U.S. country missions are able to deal effectively on multilateral issues with other governments. Reflecting the change in the nature of modern diplomacy, issues before multilateral forums now account for as much of the work of our country missions as traditional bilateral questions. But this fact is not yet adequately reflected in the way U.S. missions are organized and staffed.

The failure of U.S. country missions to give adequate priority to multilateral issues can prove extremely costly to the national interest. For example, in the 1960 Geneva Conference, the United States lost by one vote in its effort to achieve a six-mile territorial sea with an additional six-mile fishing zone. The day after the voting took place, the representatives of several developing countries indicated that they would have voted with the United States, had their instructions arrived in time. It was subsequently learned that the U.S. Ambassadors in these countries had not considered the law of the sea as a subject important enough to take up on a priority basis at a high level of the host government. As a result, the world community was left without any agreement on the territorial sea and fishing limits, a vacuum which has led to unilateral claims of up to 200 miles. Had our country missions done their job in 1960, the United States would now be negotiating in the Law of the Sea Conference from a far stronger legal and political position.

The ability of our country missions to perform effectively on multilateral issues is not much better today than it was fifteen years ago. During recent State Department-sponsored tours of Africa and Asia, the writer was repeatedly asked by the personnel of U.S. Embassies to explain U.S. positions on specialized questions ranging from the law of the sea to UN peacekeeping procedures and international monetary reform. This is not intended as a criticism of the officers involved—they had carefully read the telegrams of instructions and other material forwarded by the Department. But they simply did not have the necessary specialized background to understand the significance of the material and to present it convincingly to experts in the host government.

To be sure, the major U.S. Embassies have U.S. Treasury or Agriculture representatives and personnel from other Executive departments to perform certain specialized functions. But most U.S. Embassies do not. Moreover, such representatives owe their first allegiance to the Executive departments which control their careers; they tend to reflect the Treasury or Agriculture view. Finally, the system of secondment from Executive departments often leaves important gaps in the expertise of the country missions—such as oceans, environment, population, and the whole array of constitutional and procedural matters arising in the UN system.

It is time to reorganize the U.S. missions to all but the very smallest countries with which we have relations to reflect the new importance of multilateral diplomacy. In line with the changes suggested earlier in the Department of State, the Ambassador in each mission should be supported by a senior

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political aide and a senior aide for economic and multilateral affairs. The former would be responsible for the multilateral and bilateral aspects of political-military affairs; the latter would supervise not just bilateral economic affairs but all multilateral economic and functional questions. In the major Embassies, the senior aide of the Ambassador for economic and multilateral affairs would carry the rank of Minister and might have as many as three or four staff members to deal with multilateral issues like oceans, energy, environment, and population.

IV. A NEW PERSONNEL SYSTEM: AN ESSENTIAL REFORM

It is frequently acknowledged in theory, but not always reflected in practice, that people are more important than tables of organization. If the basic ideas emphasized thus far are to be translated into action—giving central priority in U.S. foreign policy to multilateral diplomacy, developing a more coherent interdepartmental effort within the Executive Branch, giving the State Department a new leadership role, improving the "delivery system" for the conduct of multilateral diplomacy—then there will have to be a new personnel system in the Executive Branch.

To begin with the most obvious point, the Department of State does not have the specialized competence in either economic or other multilateral affairs to enable it to assert its leadership in relation to other parts of U.S. government, such as Treasury, Agriculture or Commerce. The "Wristonization" program of the 1950s destroyed the critical mass of economic and international organization experts which the State Department had built up during the wartime and early postwar years. Although the foreign service has recently put emphasis on the need for economists and other specialists, its system of recruitment and career development works against this objective. The nation's top graduate students in economics, business, law and other relevant specialties for the new diplomacy are only rarely attracted to a foreign service career, because this means a succession of foreign assignments mostly unrelated to their fields of specialization. With a few notable exceptions, outstanding specialists who join the foreign service find their specialty an obstacle in career development. Country ambassadorships tend to be reserved to foreign service officers specializing in the particular region, while the few ambassadorships to multilateral institutions are usually awarded to political appointees.

In addition to crippling the State Department's potential as a lead agency for multilateral diplomacy, the present personnel system reinforces the separatist tendencies of the different Executive agencies. Treasury, Commerce, Agriculture, Labor, the Federal Reserve Board, the Environmental Protection Administration, etc., have their own career services with their own departmental loyalties and perspectives. This makes it even harder to achieve a coherent U.S. government policy in multilateral diplomacy and helps explain why our system of "portfolio government" is so often exported into the system of international institutions.

It is recommended, therefore, as an essential element in the package of reforms advocated in this paper, that there be created a new career service for economic and multilateral affairs. This new service would take its place alongside the Foreign Service as a second "track" for careers in the Department of State. It would also provide personnel for the international divisions of other executive agencies. In contrast to Foreign Service personnel, officers in the new service would spend at least half of their careers in Washington, could look forward to a series of jobs making full use of their professional specialties, would be able to stay in assignments longer than the 2–4 years that is standard in Foreign Service careers, and would be free to move back and forth between the State Department and international work in other Federal agencies. The members of this new career service would serve at USUN and other U.S. missions to multilateral organizations. They would also serve with U.S. country missions in assignments in economic and multilateral affairs. The new career service would encourage lateral entry of distinguished persons from the private sector and grant liberal leaves of absence for career personnel to take positions in private business, law and the academic world.

The new service in economic and multilateral affairs would aim to develop the kind of prestige that has been acquired by the French *inspecteurs des finances*. It would be an elite service, with entry restricted to approximately 100 persons per year based on competitive examination, academic records and professional experience. Members of the service could look forward to a much broader range of career possibilities than are available to economists and other specialists now in the Foreign Service; they would move into senior assignments throughout the Executive Branch and leading positions in the private sector. Corporations, law firms and universities would regard this elite service as a prime source of top level personnel.

The new career service would bring together economists (including experts in international trade, international finance and international development) and also specialists in international law, international organization, energy, agriculture, population, environment, oceans, and relevant areas of science and technology. A young ex-

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pert concerned with the world food problem could move from back-stopping FAO in the State Department's IO Bureau to a related assignment with the Department of Agriculture to the U.S. Mission to the FAO in Rome and perhaps also to a period of service with the FAO or the new World Food Council. Similarly, a specialist in environmental matters could move from the State Department's Bureau of Oceans, Environment and Science to the Environment Protection Administration to the National Oceanographic and Atmospheric Agency and perhaps to service with the United Nations Environment Program.

The new career service would provide a natural channel for the recruitment of outstanding talent for the international agencies. By facilitating movement back and forth among the Federal Government, the international institutions and the private sector, the career service could promote better communication and cooperation among three essential elements of the international system.

February 3, 1975

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Conduct of Multilateral Diplomacy by the United States Government*

Charles W. Yost
January 1975

This paper consists of three parts. The first briefly identifies the principal multilateral organizations and agencies in which the United States participates, sets forth some assumptions on which that participation is based, and presents the primary critical choice confronting the U.S. government, on the response to which chiefly depends the success of our participation and in many cases the success of the organizations themselves.

The second part of the paper examines the role in multilateral diplomacy which various branches, departments and agencies of the U.S. government play, and presents suggestions for more effective participation in the future.

The third part is a brief summary of the analysis and conclusions contained in the first two.

I. SCOPE: U.S. PARTICIPATION IN MULTILATERAL ENTITIES

While space does not permit description of the numerous multilateral organizations in which the U.S. now participates, it will be useful simply to list the principal ones, in order to illustrate their diversity and to underline the magnitude of the problem the U.S. government confronts in carrying out efficiently its participation in all of them.

There is, first, the United Nations organization itself, including the Security Council, the General Assembly, the Economic and Social Council, the Secretariat and the World Court.

There are, second, the agencies which have subsequently been created under immediate UN aegis, such as the Children's Fund, the Refugee Organization, the Development Program, the Conference on Trade and Development, the regional economic commissions, the Environmental Program, the Population program, the Disarmament Conference in Geneva, the Law of the Sea Conference, and the wide range of ad hoc peacemaking and peacekeeping bodies some of which, such as those in the Middle East and Cyprus, are currently active.

There are, third, the specialized agencies, associated with but administratively independent of the UN, such as, the Food and Agriculture Organization, the World Health Organization, the Monetary Fund, the World Bank, and the regional development banks, the International Labor Organization, the UN Educational, Scientific and Cultural Organization, the International Atomic Energy Agency, and several others.

There are, fourth, the regional political and military organizations in which the US participates: the Organization of American States, the North Atlantic Treaty Organization and, to a lesser degree, the Southeast Asian and the Central Treaty Organizations.

There are, finally, a growing number of non-UN multilateral economic agencies, mostly composed of developed countries, such as the Organization for Economic Cooperation and Development and the newly created International Energy Agency.

It is the effective and integrated participation in all this confusing variety of multilateral organizations which confronts the US government with so difficult a problem.

Assumptions

This paper does not deal with the substance of US foreign policy and will not attempt to discuss to

*After this essay had been completed, Ambassador Yost was asked by the Commission's staff to furnish some additional recommendations on this subject. These may be found at Annex 3 to this paper.

what extent the US should conduct that policy through international organizations. We may simply note that, as a result of our experience with isolationism in the interwar period and of a number of critical developments just after World War II, the U.S. between 1944 and 1949 joined in creating and participating in a wide variety of international organizations and has since joined in setting up a number of others.

This paper moreover assumes, and this is the critical point, that, while U.S. participation in a particular organization may cease and in others will fluctuate in intensity and commitment, participation in a considerable number and variety of international organizations will continue. Indeed, it should be obvious that, while outside Western Europe military alliances seem to be declining in importance, there is now under way an accelerating proliferation of international economic agencies of many different kinds. In view of increasing global interdependence, so dramatically marked by the energy crisis, it may be expected that such international economic agencies will grow in number and significance.

Whatever U.S. policymakers may prefer, therefore, it seems safe to assume that, short of a general breakdown in international order, the U.S. will continue to participate actively in multilateral organizations and that participation is more likely to increase than to diminish.

The Primary Critical Choice

Even assuming continued U.S. participation in a considerable number of multilateral institutions, there is wide room for choice as to the depth of our commitment, the intensity of our participation, and the quality of our leadership in each one. Moreover, given the superior power, affluence and influence of the United States and the extent of our commitment, the exercise of active leadership or a mere pro forma participation on our part can go far toward determining the effectiveness of many organizations. A slackening of U.S. participation and leadership means, therefore, not only our holding aloof, but usually a weakening of the organization itself as an instrument available to other nations and indeed to ourselves if we should later revise our view of it.

During the first two decades after World War II, the U.S. participated actively and exercised a positive leadership in most of the multilateral organizations listed above. During the past decade, for a variety of reasons, this has been less true. Our long preoccupation with Vietnam and the coolness toward our involvement there expressed by our partners in such diverse institutions as NATO and the UN, our own subsequent disillusionment with Vietnam and consequently to some degree with overseas commitments in general, détente with the Soviet Union and China and the resulting erosion of a principal rationale for both military alliances and foreign aid, the unpalatable behavior of third World majorities in organizations where our influence has declined and theirs risen—all these have created in the executive branch, in the Congress and and among the American public a mood of skepticism, even of alienation, in regard to many multilateral institutions at the same time that we rather reluctantly recognize the increasing need for others.

The primary critical choice in the area of multilateral diplomacy confronting the President and Secretary of State is, therefore, not, as we have noted, whether to participate in a variety of multilateral institutions, for that is unavoidable, but how vigorously to do so, whether to treat them mostly as a facade behind which traditional bilateral diplomacy pursues its customary course or to refresh, invigorate and expand them to bear more of the burdens of international interdependence.

If the President and the Secretary do not give a lead to Congress and people in the latter sense, the tendency is likely to be, because of the general mood alluded to above, a slackening of our participation in all but a favored few of these organizations, primarily those composed of developed countries or those in which, for one reason or another, our influence continues to be predominant.

This then is a critical choice facing our authorities which will shape not only the scope and nature of our own multilateral diplomacy but the international structure which will be available to all to cope with the problems of coming decades.

We may now turn to an examination of the present and possible future roles in multilateral diplomacy, whatever its character may prove to be, of the interested branches, departments and agencies of the U.S. government. Due attention will also need to be paid to the role of the American public.

II. THE ROLE OF VARIOUS GOVERNMENTAL DEPARTMENTS AND AGENCIES

The White House

The President is responsible for the conduct of all aspects of foreign affairs. There has been, however, ever since the U.S. assumed wide global responsibilities during and after World War II, a per-

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sistent and often intense argument as to the extent to which he should direct these affairs himself, should delegate these responsibilities to the Secretary of State or to other officials inside and outside the White House, and should involve the Congress in the process.

This argument need not be gone into in depth in this paper but must be touched on because of its particular relevance to the conduct of multilateral diplomacy. The number and variety of multilateral institutions in which we participate and the consequent number and variety of U.S. departments and agencies concerned with their operations necessitate a degree of coordination by someone, either the President himself, the Secretary of State, or some interagency machinery, which is not required for most bilateral diplomacy. Moreover, the presence of the US Ambassador to the UN in the President's Cabinet tends to involve the White House more directly in multilateral diplomacy than in ordinary bilateral diplomacy.

President Roosevelt was inclined to concentrate most foreign policy decision-making in the White House itself, though he did leave to the Secretary of State main responsibility for negotiating and setting up the United Nations. Presidents Truman and Eisenhower delegated very substantial authority to their Secretaries of State. Presidents Kennedy and Johnson reserved more authority to themselves but still left a considerable measure of decision-making, outside their own areas of principal concern, to the State Department. President Nixon concentrated almost all significant foreign policy decision-making in the White House, in his own hands or those of his National Security Adviser.

Presidents Truman, Eisenhower and Kennedy had considerable respect for international institutions, the United Nations, NATO, the OAS, etc., and conducted much of U.S. foreign relations through them. Presidents Johnson and Nixon, partly because of Vietnam, even more because of their own personal styles, had less confidence in international institutions of any kind and tended to bypass them when possible on matters of substance and significance.

Future Presidents will have the option of following either of these courses. If our assumption is correct, however, the U.S. participation in multilateral organizations will necessarily continue and probably increase, Presidents will have the responsibility of assuring that participation is as effective as possible. Their most serious administrative problem will be to see to it that the United States speaks with a single or at least a carefully orchestrated voice in the multifarious institutions in which we participate.

That has not always been the case in the past and is not now. While the primary spokesman is the Secretary of State, there are also in various contexts the Secretaries of Defense, Treasury, Commerce, Agriculture, Labor and HEW, the Chairman of the Federal Reserve Board and the heads of several other executive agencies, the Ambassador to the United Nations, and representatives at some other multilateral institutions and conferences, including members of Congress, who have independent political positions or direct relations with the President. Moreover, where expenditures are involved, as they usually are, the office of Management and Budget will insist on having a say, which may be the decisive one.

This multiplicity of semi-independent voices, each ostensibly representing the United States, has been the most conspicuous shortcoming, except for the comprehensive benign neglect by the two latest Presidents, of our participation in multilateral institutions. Secretaries of Departments, their subordinates and members of Congress acquire a vested and parochial interest in a particular international organization for which they have a partial responsibility, provide U.S. representation at its meetings, enunciate policy and take initiatives there which may not be consistent with overall U.S. foreign policy, and determine U.S. contributions to its budget with little reference to U.S. budgetary policy towards other international agencies.

The President has, in the National Security Council and the Council on International Economic Policy, machinery intended to provide the necessary coordination. Their functioning in this respect has been erratic.

The role of the National Security Council has fluctuated considerably, depending primarily on the degree to which the President delegated responsibility to the Secretary of State and to a lesser degree the Secretary of Defense. Under Truman and Eisenhower, the Council was almost entirely an instrument of coordination and the National Security Adviser an executive Secretary responsible for ensuring that the relevant departmental views were presented to the President for decision and, somewhat less successfully, that his decisions were carried out. President Kennedy found even this machinery too cumbersome. President Nixon, on the other hand, vastly enhanced the responsibilities of the National Security Adviser and his staff, to the detriment of the Secretary and Department of State. Such an arrangement would not necessarily work to the disadvantage of our participation in multilateral institutions, but in practice it did, because the particular President and Adviser had a low opinion of such institutions, and the powerful NSC staff practically ignored them. The present arrangement uniting the Secretary of State and National Security Adviser in a single person, while criticized for conferring on him too much power,

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has the virtue of eliminating duplication and friction between State Department and NSC staff and giving the Secretary of State more authority to direct and coordinate U.S. foreign policy, including policy toward multilateral institutions.

Actually the National Security Council itself, as distinguished from the Adviser and his staff, has never been more than a Presidential instrument for consultation and coordination. Insofar as multilateral institutions are concerned, it has performed that function reasonably well in the security field. Our policies and representation in such security organizations as NATO have on the whole been successfully coordinated.

Far different, as suggested above, has been the experience in the economic field, in which are of course to be found by far the largest number of multilateral organizations and agencies. A variety of instruments centering in the White House have been tried over the years, of which the Council on International Economic Policy is the latest, but none has worked satisfactorily. Too many domestic interests, too many executive satrapies, too many Congressional preserves are involved. The President, who is the only officer clearly superior to all the others, does not have the time consistently to direct such a Council. Neither does the Secretary of State, and he is moreover not in a position to dictate to Cabinet colleagues, some of whom may be as close to the President as he is. Consequently we have had and continue to have a multiplicity of voices speaking for us in multilateral economic organizations.

With increasing global interdependence the need for such organizations is almost certain to increase, as will the necessity for much more rapid and coordinated U.S. decision-making in regard to their areas of concern than has been displayed in Washington during the past year. Either the President will have to devote much more time to such matters, or he will have to delegate more authority over them to the Secretary of State or to a substantially strengthened instrument of coordination in the White House such as the CIEP.

The State Department

As the one substantial bureaucracy concerned with the whole range of foreign affairs, the State Department will inevitably be, no matter what may be the President's preference as to the main center of foreign policy decision-making or what may be his attitude toward multilateral institutions, the principal instrument for the day-to-day conduct of whatever multilateral diplomacy we chose to engage in. There are, moreover, very few parts of the Department which are not now involved to some degree in the conduct of such diplomacy.

The Bureau of International Organization Affairs (IO) has the primary responsibility and is divided into units designed to service each of the various sorts of multilateral organizations, except the regional political and military organizations, which are serviced by the appropriate geographic bureau and to some extent by the Bureau of Politico-Military Affairs. On the other hand, the geographic bureaus are also involved in all significant action by any multilateral organization or agency affecting their areas.

The economic bureaus and AID are concerned with international economic problems which more and more gravitate to multilateral organizations and agencies. The Policy Planning Staff examines multilateral as much as bilateral problems. The administrative bureaus are involved because U.S. contributions to multilateral organizations are in large part incorporated in the State Department budget and because U.S. missions and delegations to international organizations and conferences are staffed, in large part but by no means wholly, by the State Department.

On the whole, the machinery for conducting multilateral diplomacy inside the State Department works reasonably well. There is of course debate, friction, and occasionally end runs to the Secretary among bureaus which perceive their legitimate interests as being different. The classic clashes in the past, in the era of decolonization, have been between the European Bureau on the one hand, concerned with our relations with our European allies and South Africa, and the African, Middle Eastern and South Asian, Far Eastern, and International Organization Bureaus on the other hand, concerned with our relations in their areas and with the parliamentary situations in the relevant organizations.

These differences still persist, to some degree reflecting contradictory attitudes on the part of bureaus responsible for our relations with developed and with developing countries. Differences among economic bureaus, between economic and political bureaus and between economic bureaus and IO will certainly increase in connection with increasing involvement in multilateral organizations concerned with energy, food, the sea, population, multinational corporations, etc.

Such internal differences of view, reflecting the diversity of U.S. external interests, are inevitable. Since they are also inevitably reflected in our multilateral diplomacy, it is difficult to see how the State Department could effectively carry its responsibilities in the multilateral area without a separate bureau charged with ensuring that it do so. The Foreign Offices of other countries, with less exten-

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sive international involvement or less commitment to international institutions, may be able to get along with a less formal and elaborate instrument for this purpose. For the U.S. State Department to endeavor to do so would, first, produce an even less unified policy and practice than we now have in regard to our participation in international organizations and, second, require an inordinate amount of the time and attention of the Secretary and Undersecretary to mediate and settle the clashes among bureaus.

Indeed, it has been recommended, by the President's Commission for the observance of the 25th anniversary of the United Nations and by policy panels of the United Nations Association, that the prestige and authority of IO be expanded, for example, by designating its chief as an Undersecretary rather than Assistant Secretary, by giving this office "additional and comprehensive authority to deal with U.S. involvement in the social and economic activities of the UN system", (that is, to coordinate at his level rather than at the White House or Secretary's level the involvement in these activities of all U.S. departments and agencies concerned), or by establishing a "high-level evaluation and planning unit" in IO "to develop specific proposals for strengthening these institutions and for enhancing U.S. participation."

There is merit in each of these suggestions, but they are formal rather than substantive in character. Whether or not they would work in practice and would "enhance U.S. participation" in multilateral institutions would depend on less formal but more critical factors: whether the President wishes to enhance such participation, whether he is willing to delegate to the Secretary of State primary responsibility for directing such participation, including authority to coordinate the policies of the interested U.S. economic agencies, whether the Secretary would in turn be willing to delegate a large measure of that responsibility to an "IO" Undersecretary, whether that officer would have the stature and prestige to make effective his titular responsibility, whether the Secretary had firm faith in multilateral institutions, whether the "IO" Undersecretary or Assistant Secretary enjoyed the Secretary's full confidence, was personally close to him, and was included by him among the half dozen principal policymakers in the Department. If all or most of these questions are answered in the affirmative, any reasonably simple administrative structure will work. If they are answered in the negative, no structure will suffice to lift the operation of servicing multilateral organizations above the level of pedestrian routine, bureaucratic infighting and political irrelevance.

The question has been raised whether IO formulates or participates in the formulation of policy. It does so in exactly the same sense as does any other bureau of the Department concerned primarily with substantive rather than administrative affairs. The European Bureau, for example, formulates and proposes policy in regard to our relations with France, the African Bureau in regard to our relations with Southern Africa, the Bureau of Economic Affairs in regard to international trade, the Bureau of Politico-Military Affairs in regard to international security, and IO in regard to questions being dealt with by international organizations. None of these formulations and proposals are worked out in isolation, none are presented to the Secretary and the President without the concurrence or dissenting views of other interested Bureaus and Agencies, none become national policy until they are approved by the President and Secretary.

For at least thirty years there has been in progress in the Department a muted struggle between geographic and functional bureaus, each trying to appropriate at the expense of the other the main responsibility for policy making. However, experience has confirmed the need for both types of bureau, working in close if often reluctant tandem. My judgment as to the case in point is that both the formulation of policy in regard to and the servicing of our participation in multilateral organizations would sink into the utmost confusion if there were not a central bureau responsible in the first instance for policy initiation and for day-to-day servicing.

One final word in this connection. Some time ago, IO took steps to equip itself better to deal with the variety of interrelated economic problems arising in the institutions it services and to coordinate and represent in those institutions the views of the numerous U.S. agencies involved. One such step was to incorporate into its own staff officers seconded from some of these agencies. I am not able to say whether or not these arrangements have worked satisfactorily. However it is certain, whether or not the higher level structural reforms outlined above are adopted, IO must continue to organize itself to represent and coordinate more effectively U.S. policies in old and new multilateral organizations concerned with economic problems. This may more and more become the main focus of its activity.

Other Executive Departments and Agencies

Most of what needs to be said about the involvement of other executive departments and agencies in the conduct of multilateral diplomacy has already been set forth in the preceding sections on the White House and the State Department.

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The Defense Department is a special case. It is obviously deeply concerned with foreign affairs. It commands and directs large U.S. forces in Western Europe, the Mediterranean and East Asia, military aid and training missions in scores of countries, and U.S. participation in the military aspects of regional alliances. Because of the inherently military character of the prolonged Cold War and the extensive mandate consequently given the National Security Council since its establishment, the Defense Department has in my estimation come to play a larger role than is warranted in the formulation and conduct of foreign policy generally, a larger role indeed than one encounters in any other democratic country, perhaps even in the Soviet Union and China.

As far as U.S. participation in multilateral institutions is concerned, however, whether institutions where Defense plays a large part such as NATO or where it plays a small part such as the UN, coordination, at the top through the NSC and down the line between Defense and State, has on the whole been excellent and no major problem appears to exist.

The difficult problems arise in regard to the involvement of such Departments and agencies as Treasury, Federal Reserve, OMB, Commerce, Agriculture and others, which have primarily domestic responsibilities but which are unavoidably concerned with most of the problems being dealt with by multilateral economic institutions. Indeed the initiatives or vetoes of these agencies, taken primarily on domestic grounds, are often decisive regarding U.S. policies in multilateral institutions and not infrequently decisive, because of our preponderant wealth and influence, on the policies of those institutions themselves.

Ideally, it might be best if the involvement of these domestic agencies were limited to policy determination, at a high level through the Council on International Economic Policy or such other similar machinery as the President may from time to time constitute, at a lower level through such intimate liaison with State, particularly IO, as has been described above.

Rightly or wrongly, however, as we have pointed out several times, these departments and agencies (like their counterparts in other countries) have become involved not only in multilateral policy making but directly in multilateral negotiation and indeed in the servicing of U.S. participation in multilateral institutions operating in their functional field, Treasury vis-à-vis the Fund and Bank, Agriculture vis-à-vis FAO, HEW vis-à-vis WHO, EPA vis-à-vis UNEP, etc.

No doubt their expertise is indispensable in dealing with these specialized institutions, but their frequent assertion of primary, almost independent, responsibility for both policy and budget formulation and for representation and negotiation vis-à-vis their multilateral counterparts, has led to that unhealthy phenomenon referred to above of the U.S. speaking on the international stage with many distinct and often dissonant voices. As multilateral economic institutions multiply, this phenomenon, unless strictly controlled, will get worse rather than better.

The machinery for policy coordination exists but needs to be rigorously applied and enforced, by the President most of all, under his authority by the Secretary of State and his assistants in IO and the economic bureaus in State. The structure is probably too complex ever to work smoothly, any more than the corresponding multilateral institutions do, but it can and should be made to work better than it does.

Representation at Multilateral Institutions and Conferences

A special and often awkward feature of the problem of coordination, of endeavoring to ensure that the U.S. speaks with a single or at least a well orchestrated voice, arises in regard to U.S. permanent representation at multilateral institutions and temporary representation at international conferences. This problem does not differ in essence, though it does in complexity, from that existing in many of our larger embassies in foreign capitals where a substantial number of U.S. agencies are represented.

A particularly delicate problem exists with regard to the most conspicuous U.S. representative to a multilateral organization, the so-called Permanent Representative to the UN, who is also a member of the President's Cabinet. He also sits with the NSC when it is dealing with matters falling to a significant degree within the purview of the UN.

These formal relationships, despite their prestigious nature, are far less important than the Representative's personal ties with the President and the extent to which the latter seeks his advice and involves him in in policy making. Both before and after holding the position myself, I have argued that it is more advantageous that the Permanent Representative be a prominent political personality, for whom the President must have respect whether or not he has regard, than that he be an expert in foreign affairs or in the United Nations. Of course he must also have a sincere belief in the UN and a considerable diplomatic facility if he is to perform his duties well. In my opinion the most successful Permanent Representatives to the UN were Cabot Lodge, who was close to President Eisenhower, and Adlai Stevenson, who had a strong political con-

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stituency of his own which Presidents Kennedy and Johnson respected, even though they were not particularly congenial with him.

The potentialities of the Permanent Representative must not be exaggerated. Since his duties keep him for the most part in New York or at other UN headquarters, he can be but sporadically in Washington at the center of power and therefore, even if he is on intimate personal terms with the President, cannot compete with those constantly in or around the White House. Much depends therefore also on his relations with the Secretary of State and the IO Assistant Secretary from whom his day-by-day instructions emanate, as they must if policy is to be properly coordinated. This liaison is usually constant and intimate, and effective representation in multilateral organizations depends upon its being so. As in any other embassy, the Permanent Representative and his staff regularly avail themselves of the right to propose policy and tactics, they even occasionally resort to the right to appeal to the President, but normally they will and should in the last analysis be subject to instructions from the Secretary of State.

What has been said of the Permanent Representative to the UN, the most prestigious of this corps, applies a fortiori and mutatis mutandi to the Ambassador to NATO, the Ambassador to multilateral agencies in Geneva and other heads of permanent missions of this kind.

For the most part these missions are staffed by officers of the State Department, though representatives of Defense, CIA and various economic agencies are sometimes assimilated to them. As in an ordinary embassy, whether or not there is smooth coordination within such a mission and between it and the agencies in Washington represented in it, depends less on organization charts and formal procedures than on the vigor, skill and personality of the chief and deputy chief of the mission.

Unfortunately most Presidents have found it convenient, even more than in filling regular embassies, to indulge in political patronage in making senior appointments to missions to multilateral institutions, even more in making temporary appointments to periodic assemblies or to international conferences. In the case of a permanent mission, as in the case of regular ambassadorial appointments, a political appointee will occasionally be a man of outstanding ability and unique experience. On the other hand, often he is not.

As far as representation at international conferences and periodic assemblies, such as the UN General Assembly, is concerned, it is appropriate to appoint both experts in the relevant fields of specialization from other domestic agencies and, as so-called "public members", representative citizens from the professions, business, and non-governmental organizations concerned with foreign affairs. The presence of members of Congress on UNGA and other delegations is particularly useful. Far too often, however, in the process of paying its political debts the White House will appoint to such positions individuals who either have not the slightest interest in the substantive duties involved or are totally incompetent to perform them. In such cases both the image and the interests of the U.S. may suffer substantially. Except in rare circumstances, the White House should permit all these appointments to be made in the State Department on substantive grounds, when appropriate in consultation with the domestic agencies concerned.

Finally there should be mentioned in this connection, as relevant to the effective conduct of our multilateral diplomacy, the importance of more attention being devoted to ensuring the nomination to positions in international secretariats of U.S. nationals of high competence and in sufficient quantities at both senior and junior levels. Much more effort should be devoted to attracting able young men and women into these services as a career. Even if one assumes that they will perform their duties as loyal international civil servants, as they should, their presence and their competence will help to assure the effective functioning of multilateral organizations, not in accordance with ephemeral U.S. policies but with the benefit of American political and administrative traditions and training.

The Congress

One major object of criticism of the conduct of all foreign affairs in recent years is the inadequate role afforded to or assumed by the Congress. This criticism applies to the conduct of multilateral diplomacy as well.

The Congress almost inevitably represents the interest or lack of interest, the inclination for or against, certain aspects of foreign affairs manifested by the electorate. The posture assumed by the Administration toward a given aspect affects opinion both in the Congress and the electorate.

When there was strong support among the public and by the public for the United Nations and related international organizations, there was also strong support in the Congress, and desired legislation and appropriations were rather easily obtained, even for example participation in the controversial UN bond issue to finance the Congo peacekeeping operation. As U.S. Administration support of the UN has for a number of reasons declined since 1965, it has been correspondingly difficult to maintain Congressional support.

The Administration should be wary of giving public vent to momentary irritation over displeasing behavior by majorities at international assemblies, lest it jeopardize some of its own longer term objectives. Congress reacted quickly and emotionally to public Administration reactions to the change in Chinese representation at the UNGA in 1971 and to its invitation to the PLO leader to address its session in 1974.

Congress mandated a reduction from 31% to 25% in U.S. contribution to the regular UN budget, cut off for a time payment of our dues to ILO, required the Administration to violate UN sanctions against Rhodesia in respect to imports of chrome, and has reacted negatively to unpalatable developments during the last UN General Assembly.

Since most multilateral organizations and agencies are dependent to a considerable degree (varying roughly from 25% to 75% of their budgets) on U.S. financial dues or contributions, willingness by the Congress to appropriate the necessary funds is essential to effective U.S. participation in multilateral diplomacy. There has been argument whether it is sound practice for U.S. contributions to multilateral organizations to be presented to Congress as part of the State Department budget, since they must be justified on quite different grounds than the normal expenses of a U.S. government department. Whether these contributions would fare better or worse in the Congress if dealt with separately is an open question.

As to the broader question of Congressional attitudes toward multilateral organizations, both the Foreign Relations and the Foreign Affairs (new International Relations) Committees have subcommittees on international organization which are sympathetic to continued and more effective U.S. participation, and the Members of Congress for Peace through Law also work actively in this sense. They constitute, however, a small minority of the Congress, and the majority attitude tends to be one of indifference colored with skepticism.

As in most aspects of foreign affairs, what is most required to secure and maintain the necessary Congressional support of U.S. participation in multilateral diplomacy is (a) a clear and consistent policy by the Administration in this sense and (b) a fuller and more continuous explanation by the Administration to Congressional Committees and individual Congressmen of what it proposes to do and why. A more vigorous effort in this sense is particularly necessary at this time because (a) domestic problems will certainly absorb most of Congress' attention in the immediate future, (b) there is a strong inclination to cut down on all foreign programs requiring money, and (c) there is an especial disposition to be doubtful of participation in those international organizations, now a considerable majority, in which the U.S. no longer has a predominant influence.

The Public's Influence

Recent developments have also fostered a demand that the Administration be far more candid, open and assiduous in consulting, or at least informing, the public about foreign affairs. This demand applies equally to U.S. participation in multilateral diplomacy. Indeed, if the assumption on which this piece is based—that increasing global interdependence will necessitate an increase in such participation—is correct, the Administration should be taking steps now to prepare and condition the public for such increased participation.

The first responsibility in this sense of course lies with the President as leader and spokesman of the Administration. The most comprehensive responsibility lies with the Department of State, since it has in place a considerable machinery in its Bureau of Public Affairs for informing the American public. If it chooses to avail itself of their resources, the Department will find a substantial array of private organizations interested in explaining and reenforcing U.S. participation in one or more aspects of multilateral diplomacy: the United Nations Association, World Affairs Councils, the Atlantic Council, the Foreign Policy Association, the Council on Foreign Relations, the League of Women Voters, the National Council of Churches, the Overseas Development Council, and a host of others.

One improvement in U.S. government domestic information programs on foreign affairs, which would be especially relevant to those relating to participation in multilateral activities, would be a less exclusive concentration on explaining and justifying U.S. policies and more attention to explaining that other nations, often a large number of them, do not always agree with us and why they do not. Such more balanced presentation would better prepare the U.S. public for the setbacks, adjustments and compromises in the conduct of multilateral diplomacy which we will inevitably more and more encounter.

Finally, it should be noted that whatever policies are adopted by the U.S. government in regard to its participation in multilateral diplomacy should be disseminated and explained in its overseas programs by the U.S. Information Agency. In order to enable it to do so, the Agency must be fully apprised of policy formulation and implementation in Washington, New York, Geneva and wherever else such participation takes place.

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III. SUMMARY AND CONCLUSIONS

Character of Participation

This paper deals with U.S. participation in five types of multilateral organizations and agencies: the main organs of the United Nations; agencies created by and subsidiary to the UN; specialized agencies associated with but administratively independent of the UN; regional political and military organizations; non-UN multilateral economic organizations.

The paper assumes that, while U.S. participation in some of these may terminate and in others will vary with time in intensity and commitment, the compulsions both of prolonged involvement and of growing global interdependence will be such that our participation in most such institutions will continue and in many will increase.

The primary critical choice which will confront U.S. Administrations now and in the future will therefore be not whether to participate but whether to do so in a routine way with a minimum of conviction or, on the contrary, to exercise vigorous leadership in endeavoring to strengthen these institutions so that they will better serve ourselves and others.

Conduct of Participation

THE WHITE HOUSE

The President has the responsibility for decision-making in regard to U.S. participation in multilateral diplomacy and institutions, as he does in regard to foreign policy in general. His problem is, however, complicated in this area by the number of executive departments and agencies involved in a growing number of multilateral institutions, and the need to coordinate U.S. participation more effectively. If there is not more effective coordination, the U.S. government will continue to find itself, as often in the past, speaking in multilateral bodies through a variety of voices which ignore or contradict each other.

Responsibility for this coordination can be centered in the White House, under a single or several advisers or under interdepartmental councils like the NSC and the CIEP, or it can be delegated to the Secretary of State and his Department. In either case the responsible officer or officers must have the President's consistent support and must be able to enforce their coordinating authority. On the whole, the NSC has satisfactorily performed this coordinating role, but its mandate cannot be stretched too far without giving a military cast to too much of foreign policy. On the other hand, neither the CIEP nor other similar White House instrumentalities have been notably successful in coordinating U.S. policy and practice in multilateral economic institutions.

THE STATE DEPARTMENT

Even if significant decision-making is retained in the White House, the day-to-day conduct of multilateral diplomacy will have to be carried out by the State Department, the only substantial bureaucracy concerned with foreign affairs. It will, of course, need to be assisted as appropriate by specialists from other departments and agencies. Inside the State Department, most bureaus will be involved to some degree in multilateral diplomacy, but, once again, unless there is a single bureau responsible for initiating policy and coordinating and supervising its implementation, confusion, dissension and stalemate inside and outside the Department will frequently occur.

This function has on the whole been well served by the Bureau of International Organization Affairs, though non-governmental commissions and panels have recommended that the stature and authority of the head of this Bureau needs to be increased. Whether he is able to perform his duties effectively depends less, however, on his formal position than on whether the Secretary himself has a strong commitment to international institutions and whether he has sufficient personal regard for the chief of IO to include him among the small circle of top policy-makers in the Department.

The principal weakness of IO in the past has been in its limited ability to coordinate at its level policy and participation in multilateral *economic* institutions. This shortcoming is more of a factor of national and international administrative structure than of any defects in IO.

REPRESENTATION AT MULTILATERAL INSTITUTIONS AND CONFERENCES

The Permanent Representative to the United Nations enjoys a unique position among ambassadors in that he is a member of the Cabinet and sits frequently with the NSC. This formal position, like that of the IO chief, is less important in determining his success than (1) whether the President has a strong belief in the United Nations and (2) a warm personal relationship with the Permanent Representative. It is also necessary that the latter be on intimate terms with the Secretary of State and the IO Assistant Secretary and that, while enjoying the right of access and appeal to the President, he normally take instructions from the State Department.

These stipulations for the most part apply also to ambassadors to other multilateral institutions, though their access to the President will be consid-

erably less and their dependence on the Secretary correspondingly greater.

Representation at lower levels at all such institutions will be primarily from State but will necessarily include experts from other agencies. Effective coordination within such missions, as in ordinary embassies, will depend primarily on effective leadership by the chief and deputy chief of mission.

While it is on the whole preferable that the Permanent Representative to the UN be a prominent political personality, and while political appointments to other multilateral institutions can properly be made from time to time, this option should be used sparingly and carefully. In the past, Presidents have far too often used their power of appointment to multilateral institutions, and particularly to multilateral assemblies and conferences, to pay off domestic political debts, with little regard for the experience, competence and interest of the appointee in the matters with which he will be concerned.

In connection with our representation at multilateral institutions, more attention should also be paid to more extensive and competent U.S. representation in international secretariats.

THE CONGRESS

As in other aspects of U.S. foreign policy, it is clear that the Administration must make more effort than in the past both to explain and justify to the Congress its policies in regard to multilateral institutions and to involve members of Congress in multilateral diplomacy.

If the Administration is lukewarm in its support of such institutions and makes a practice of criticizing publicly behavior of majorities in them, it must expect the Congress to reflect and magnify that dissatisfaction, particularly in a period such as the present when the American public is skeptical of most foreign commitments and involvements. Yet Congressional approval of substantial, in many cases increasing, U.S. contributions will be necessary to the survival and health of most multilateral institutions, and the survival and health of many such institutions will be clearly in the U.S. interest in an increasingly interdependent world.

Continued and intensified Congressional representation in multilateral councils, assemblies and conferences will be important means of informing and involving a larger number of members of Congress in multilateral diplomacy and institutions.

THE PUBLIC'S INFLUENCE

For similar reasons, it will be important that the President, the Secretary and Department of State and other executive officials and agencies concerned with multilateral diplomacy devote more attention to explaining the aims and nature of this diplomacy to the American public. In doing so they will find allies in a considerable number of nongovernmental organizations which strongly support our participation in multilateral institutions.

In this connection government spokesmen, from the President and Secretary on down, must take pains not only to describe and justify U.S. policy in the multilateral area but also to explain in measured and respectful terms how and why other nations may, on solid grounds from their point of view, disagree with us. Otherwise domestic skepticism concerning our participation may be enhanced rather than diminished.

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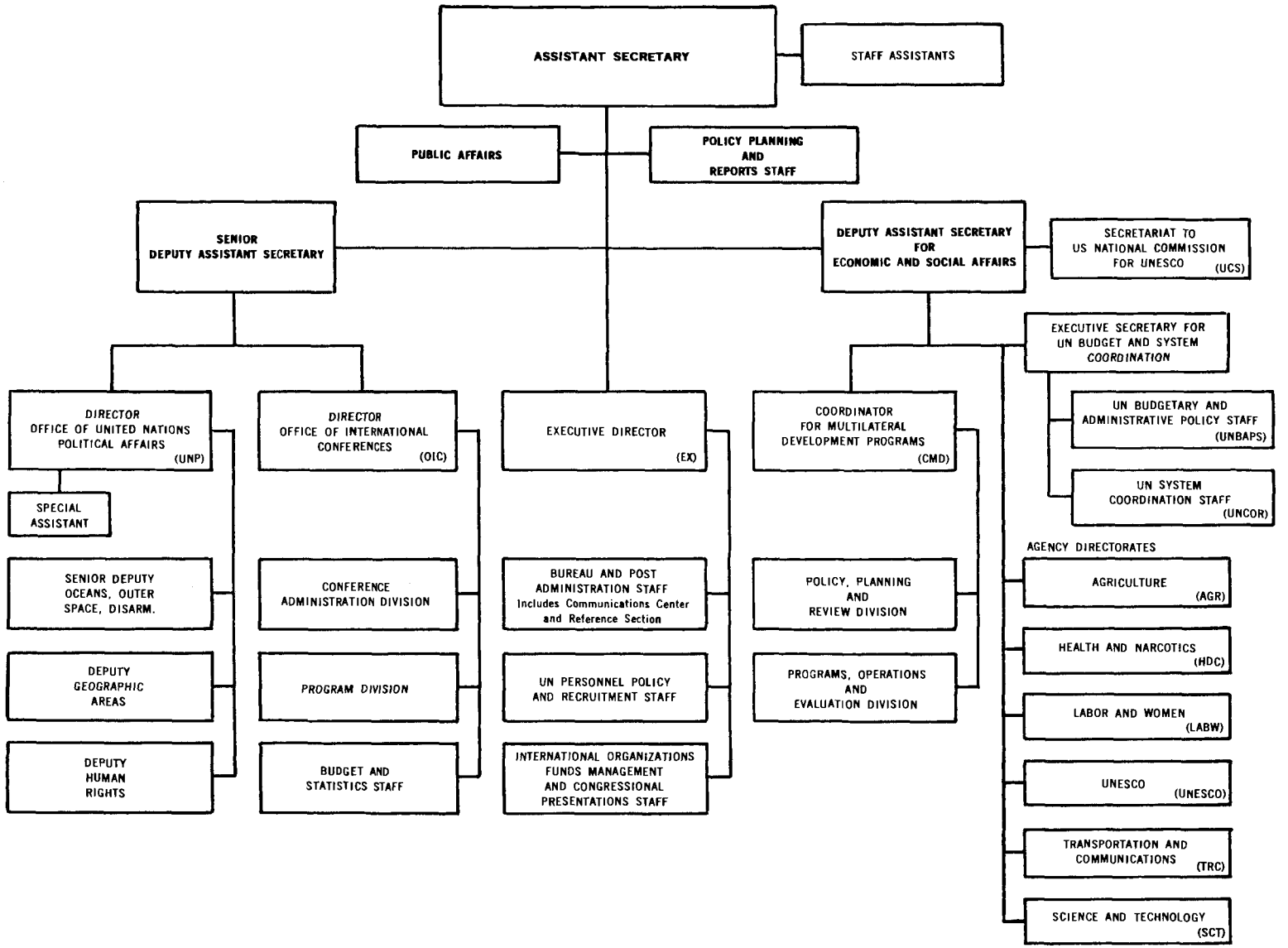
ANNEX 1:
BUREAU OF INTERNATIONAL ORGANIZATION AFFAIRS (IO)
U.S. DEPARTMENT OF STATE



ANNEX 2.—USUN FUNDING

FY	*Oblgations*	*Auth'd Positions*
1951	1,256,627	195
1952	991,798	180
1953	951,250	155
1954	797,085	115
1955	809,454	110
1956	811,056	108
1957	852,879	108
1958	925,401	108
1959	1,029,547	108
1960	1,148,898	108
1961	1,073,569	106
1962	1,200,348	117
1963	1,312,597	126
1964	1,347,231	126
1965	1,492,230	126
1966	1,610,478	126
1967	1,657,100	128
1968	1,635,800	128
1969	1,635,763	121
1970	1,892,000	111
1971	1,961,996	111
1972	2,039,600	105
1973	2,093,000	105
1974	2,400,000	107
1975	2,617,000	107

[1]General Services Administation assumed cost of USUN rent, utilities, guard service.

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ANNEX 3: ADDITIONAL RECOMMENDATIONS IN REGARD TO THE FUTURE CONDUCT OF MULTILATERAL DIPLOMACY

Charles W. Yost
February 1975

1. The President should make and publicly announce a decision of principle that, wherever appropriate multilateral institutions exist for dealing with international problems, the United States will in its own diplomacy seek in the first instance to work through those institutions in meeting the relevant problems. This decision should not be merely one of the ritual pronouncements we periodically make about the United Nations, for example, but should be strictly enforced by the President throughout the U.S. bureaucracy. Bilateral diplomacy should thereafter be supportive of, rather than a substitute for, action in and by multilateral institutions wherever they exist.

In cases where multilateral institutions appropriate for dealing with certain problems do not exist, or do exist but have been ineffective, bilateral diplomacy will of course be pursued, but even in those cases a careful review will be periodically made to determine whether the existing multilateral institution might not be reinvigorated or a new multilateral institution should not be established.

2. The President should systematically use existing or new interdepartmental councils centered in the White House, mainly the National Security Council and the Council on International Economic Policy, for the coordination of policy concerning multilateral problems. The mandate of the NSC, however, because of its strong military component and tradition, should be restricted to multilateral problems involving major military aspects, leaving the multilateral political problems to be dealt with by the President and the Secretary of State.

The President himself will have to devote considerable time to seeing to it that necessary decisions are taken in these councils and are honored by all the participants. The councils should have small administratively oriented staffs whose duties should be limited to (1) advising the President what issues might properly be considered by the councils, (2) ensuring that meetings of the councils are properly prepared, and (3) informing the President regarding the implementation of council decisions.

3. The Secretary of State should be explicitly assigned by the President primary responsibility for implementing *all* decisions in regard to multilateral problems. The President and the Secretary should create such interdepartmental bodies at a lower level than the White House councils as they find necessary for this purpose. The Secretary should call on other departments and agencies for such assistance as he needs. Differences among them which he cannot reconcile should be brought before the appropriate White House council.

All nominations of U.S. representation to multilateral institutions and conferences should be submitted to the President by the Secretary of State, and all instructions to such representatives should be despatched by the Secretary of State.

4. The Secretary of State should designate an Undersecretary of State for international organization affairs who would assume primary responsibility, under the Secretary, for the implementation of decisions by the President, the Secretary and White House councils in the field and would chair relevant interdepartmental bodies. He should be a member of the Secretary's own small inner council. On multilateral economic problems he would work closely with the Undersecretary for economic affairs.

5. The principal U.S. representative to the United Nations should continue to be a member of the Cabinet and should sit with the NSC and the CIEP whenever issues relevant to his responsibilities are being discussed. He should be an individual of national stature enjoying a warm relationship with the President and the Secretary of State. His day-to-day instructions will come from the Secretary of State.

Other U.S. representatives to the UN and to other multilateral institutions and conferences should be for the most part either career officers or persons of special technical competence relevant to their assignments. They should be proposed to the President by the Secretary of State but might first be proposed to the latter by another U.S. department or agency.

Sufficient funds should be provided to permanent and temporary delegations to international institutions to ensure that competent persons without private means may occupy them.

A more consistent and vigorous effort should be made, without violating the principle of an impartial international civil service, to place competent Americans in that service, particularly to attract young people into it as a career. To this end the U.S. should use its influence to support progressive personnel policies in international institutions.

6. The Congress should be involved to the maximum possible extent in multilateral diplomacy, by regular briefing of appropriate committees and individuals and by frequent assignment of members of Congress to delegations to multilateral assemblies and conferences. Ample funds to maintain U.S. participation in multilateral institutions appropriate to U.S. interest and resources, and to support our delegations there, should be requested and justified.

The Administration should weigh carefully the probable effect on the Congress before indulging in public criticism of the behavior of other nations in multilateral institutions.

7. The public should likewise be fully informed in regard to our participation in multilateral institutions; and in this regard also care should be taken not, through unguarded and petulant criticism, to undermine public support of these institutions as a whole. The views and interests of other nations as well as our own should be objectively explained to the U.S. public. Fuller and more regular use should be made of the numerous nongovernmental organizations willing and eager to participate in maintaining broad support of U.S. participation in multilateral institutions.

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