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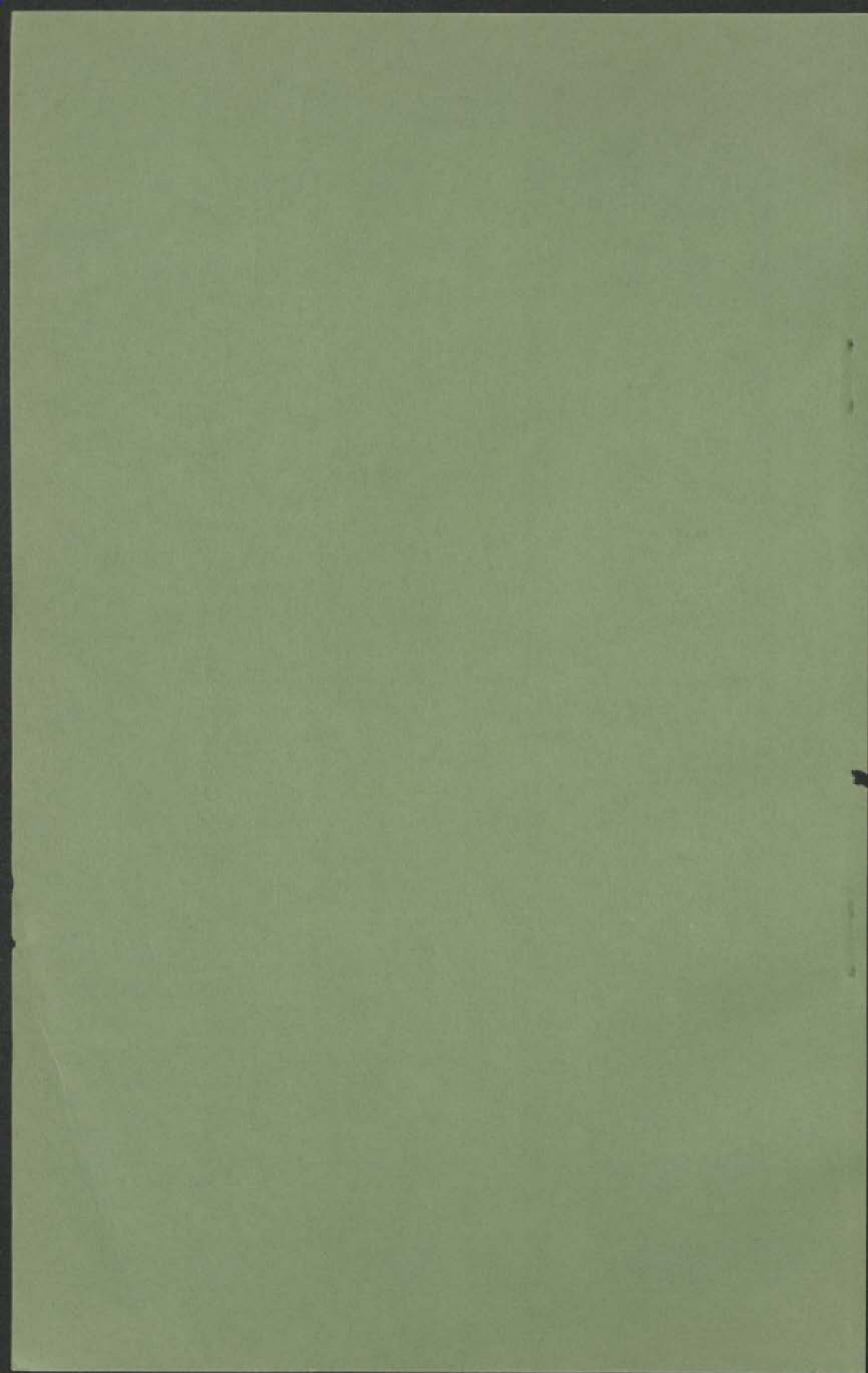
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HEARINGS
BEFORE THE
PANEL ON
ENVIRONMENTAL SCIENCE AND TECHNOLOGY
OF THE
SUBCOMMITTEE ON
ENVIRONMENTAL POLLUTION
OF THE
COMMITTEE ON PUBLIC WORKS
UNITED STATES SENATE
NINETY-FOURTH CONGRESS
SECOND SESSION
FEBRUARY 27 AND JUNE 11, 1976
PART 2
THE FUTURE OF GROWTH AND THE
ENVIRONMENT
AND
QUALITY OF LIFE AND
THE ENVIRONMENT
SERIAL NO. 94-H31

Printed for the use of the Committee on Public Works





CHOOSING OUR ENVIRONMENT: CAN WE ANTICIPATE THE FUTURE?

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QUALITY OF LIFE AND THE ENVIRONMENT

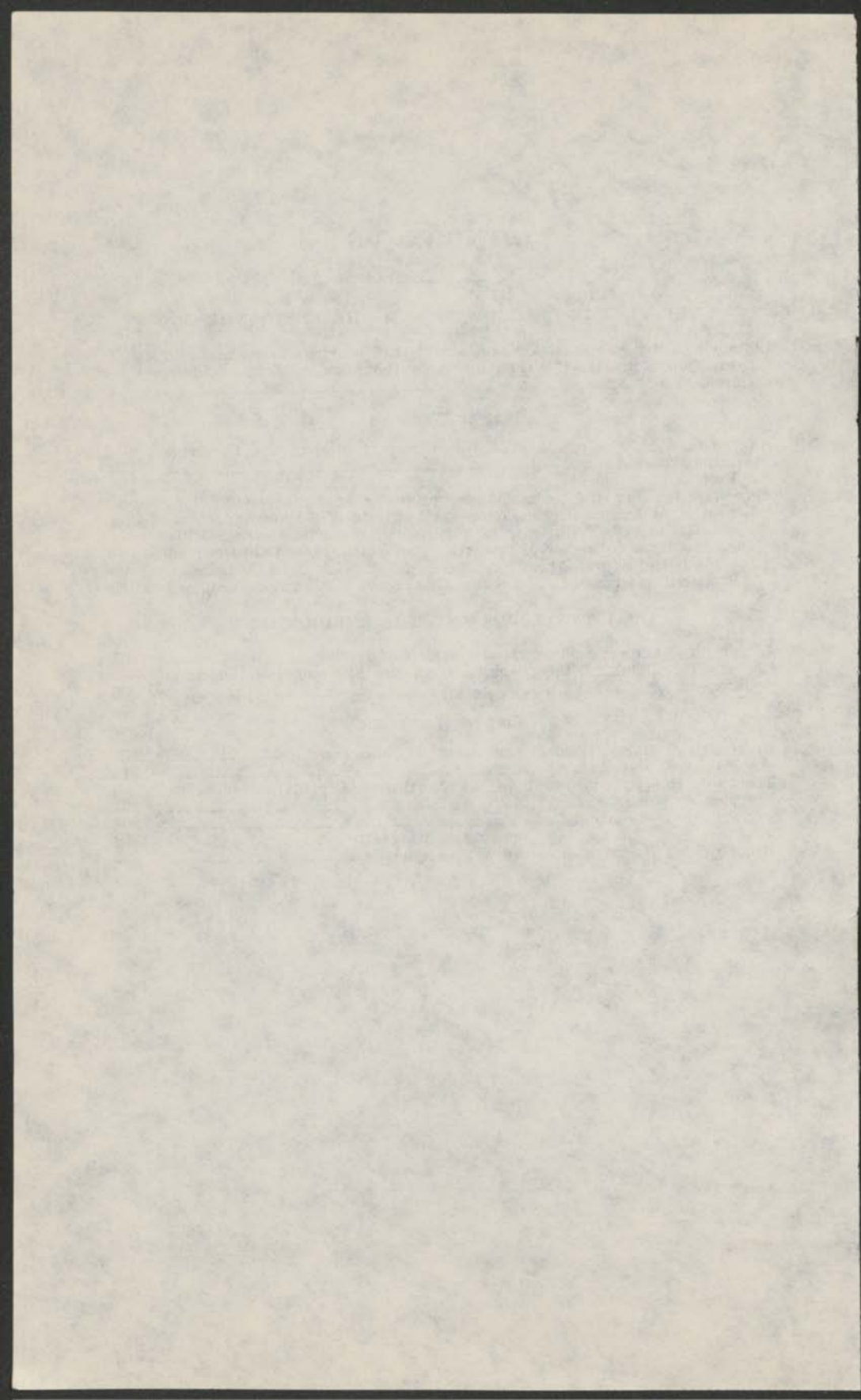
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SUMMARY AND OVERVIEW OF HEARINGS ON THE FUTURE OF GROWTH AND THE ENVIRONMENT

Cynthia Huston, Analyst in Futures, Science Policy Research Division, and
Dennis L. Little, Specialist in Futures, Science Policy Research Division, the
Library of Congress

"The Future of Growth and the Environment" was the focus of hearings on the importance of long-range forecasting in the formation of public policy. The hearings were the second in a series held by the Panel on Environmental Science and Technology of the Public Works Committee. Designed to provide an overview of the various national growth issues, these hearings emphasized the interaction between economic growth, technology, population, resource depletion, and the environment.

In his opening remarks, Senator John Culver, Chairman of the Panel, reviewed the continued general public concern about the future, particularly about the ability of public and private institutions to provide the necessary leadership. Citing the public concern for meaningful management of our natural resources, Senator Culver noted the sense of the public that thus far we have not been able to muster the leadership to forge a consensus on what "meaningful management" should entail. Compounding the public concern is the growth vs. no-growth debate. After summarizing the arguments of the debate, Senator Culver stressed his belief that we are now in a period of transition during which we must improve our understanding of national growth in terms of the interdependence and relationships of the various areas of national activity.

Turning to the witnesses, Senator Culver urged them to focus on the growth debate by exploring: the prospects for growth, desirable changes in the institutions and policies affecting national growth, alternative growth strategies and rates, and necessary positive actions that must be taken. He concluded that the "limits to growth" debate must be analyzed before the fundamental alternatives to the nation's current policies of resource exploitation and growth can be evaluated.

Jay Forrester, Germeshausen Professor at the Massachusetts Institute of Technology (Alfred P. Sloan School of Management) focused on the problems associated with unlimited growth. Emphasizing the inter-relationship of various social, economic and environmental systems, Forrester explained that growth is not something that can be influenced directly, but rather is an indicator of the on-going socio-economic process. Forrester reviewed the need for a capability of dealing with these inter-relationships, but concluded that at the present time, no agency of government has this responsibility or capability.

Forrester summarized his view of the issue of growth in the context of two phases. In the first phase extending over the last five years, the question of growth developed into a central issue largely as a result of environmental pressures and the impact of two books: *The Limits to Growth* and *World Dynamics*.

Throughout this phase more and more of the public perceived the changing circumstances, often before government officials and political leaders. Forrester noted that the hearings before the Panel might "mark the turning point leading to a new realignment of public concerns and official actions."

The second phase of the growth debate, Forrester estimates, will extend into the mid 1980s. During this phase we will need to debate and determine the trade-offs between material, social, and political values. For this process we will need comprehensive analytic techniques including system dynamics methods such as those being developed by the System Dynamics Group at the Sloan School of Management at M.I.T.

Concluding his testimony, Forrester recommended four steps for dealing with inter-relationships:

1. Developing and publishing concrete alternatives for a stable future and the means of achieving the alternatives.
2. Evaluating population vs. standard of living (i.e., identifying the trade-offs between population growth and increasing standard of living).

3. Funding and supporting the developing of comprehensive socio-economic models such as System Dynamics models.

4. Establishing several government agencies to deal with inter-relationships to assure a broad viewpoint and competition of ideas and methods.

Graham Molitor, Director, Governmental Relations, General Mills, Inc., provided a sharply contrasting view, emphasizing man's search for perfection, ingenuity and flexibility. Molitor explained that man has encountered many "limits" and has repeatedly found answers and alternatives. Molitor can find no reason to believe the problems of growth will be much different.

Generally, Molitor contends fatalism is losing ground and the optimistic outlook of "inventing the future" is prevailing. This is based in part on the recognition that society has reached the point where the size and complexity of activities requires that a more conscious direction be taken.

Molitor's optimism is not without problems. Trends in the decisionmaking process seem to be leaning toward elitism, perhaps due to public apathy and the complexity to today's issues. Molitor claims that we need to arrive at a judicious balance among citizens, elected officials or politicians, and experts.

The responsibility for fashioning the future or inventing the future is so great that it must be shared. Molitor identified six groups (elected government officials, government bureaucrats, business, religious leaders, the masses, and technocrats) which together could meet this responsibility. The strength in diversity and balance of the six groups seems to hold the best answer to conquering the problems that face us today. Traditionally America has relied upon "pluralistic power centers" in which case each group has a spokesman who represents the views of the group; government usually played the role of arbiter and the competing groups acted as checks and balances. Molitor contends that we need a "better and more scientific understanding of public policy issues genesis and development" so wiser alternatives can be selected.

Dr. Gar Alperovitz, Co-director of the Exploratory Project for Economic Alternatives emphasized the crucial importance of changing the organization of our economy. In his view, the questions concerning economic growth, income distribution, price and employment levels, and the use of scarce natural resources will become increasingly subject to explicit political decisions. If we recognize the distinct tendency towards increased concentration of economic power in the hands of public and private bureaucracies, then we will be better able to plan our economy for full employment, stable prices and conservation of natural resources.

Expressing concern for the role and direction of long range planning, Alperovitz attacked trends in both private and public planning. The increased influence of corporate oriented planning may mean that more government power will be used to support the plans of "big business".

As for public planning, Alperovitz pointed out the necessity of increasing community participation in the planning process to avoid the inevitable take over of planning by a centralized bureaucracy. "A democratically determined national plan should ultimately be based on integrated and carefully balanced consideration of the plans of thousands of communities and neighborhoods in America—not on the politically balanced view of a presidential staff and a few powerful congressional chairmen."

Economic security in the form of more jobs is essential to the success of democratic planning. To achieve this security and to undercut expansionist tendencies, Alperovitz believes that the giant corporations, which lie at the economy's core, must gradually be transformed or replaced. Alperovitz recommends the development of new economic institutions that would undertake long term planning to protect natural resources which private corporations cannot.

As a first step, Alperovitz cites the potential impact of a public commitment to jobs. This would involve a substantial increase in public control of industry. Once people have accepted the possibility of new forms of public ownership, numerous variations, which would encourage decentralization and economic competition, are possible. For example, large shares of ownership could be sold to employees who could also take on larger responsibilities of management. Alperovitz suggests that this might be especially sensible in industries, such as defense, which depend on government contracts and which are crucial to long range planning.

While recognizing that his suggestions might be controversial, Alperovitz defended them as being within the realm of political debate.

CHOOSING OUR ENVIRONMENT: CAN WE ANTICIPATE THE FUTURE?

THE FUTURE OF GROWTH AND THE ENVIRONMENT

FRIDAY, FEBRUARY 27, 1976

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION,
PANEL ON ENVIRONMENTAL SCIENCE AND TECHNOLOGY,
Washington, D.C.

The panel met at 10:05 a.m., pursuant to recess, in room 4200, Dirksen Senate Office Building, Hon. John Culver (chairman of the panel) presiding.

Present: Senator Culver.

OPENING STATEMENT OF HON. JOHN C. CULVER, U.S. SENATOR FROM THE STATE OF IOWA

Senator CULVER. I want to welcome all of you here this morning to the second hearing by the Panel on Environmental Science and Technology in its ongoing series of hearings on the importance of long-range forecasting in the policy analysis process.

The series, which is entitled, "Choosing Our Environment: Can We Anticipate the Future?," will also help to identify emerging issues of concern to the Environmental Pollution Subcommittee.

The first session on December 15, 1975, provided an introduction to the general subject of futures analysis and explored some of the potentialities as well as limitations of forecasting.

During the last few years, much attention has been directed to determining the important implications of exponential growth in a finite world. As our Nation enters the last quarter of the 20th century, it is fitting that we examine closely the future prospects and developments of the various issues of growth facing our country.

Because of the complexity of the decisions we make today, their full consequences are sometimes not felt for many years. And often it is too late to make the necessary mid-course corrections at that time.

Only by taking a look at predictive statements regarding future trends and developments can we anticipate problems before they become full-fledged emergencies.

It is fair to say that there is a certain amount of loose rhetoric about national growth and the precise meaning and distinctions have passed each other in the night. Our policy problems do not lie in finding acceptable definitions of the term "growth," but in improving our

understanding of the interplay between economic and population growth on the one hand, and resource availability, technological development, and the environment on the other hand.

National growth must be understood in terms of the issues that are linked to each of the individual but dynamically interrelated areas of national activity.

The areas that are of principal interest are population, economic growth, resource availability, price structure, and technology as a means to adjust to changing patterns of scarcity, and environmental pollution.

At the center of this national growth controversy, there are those who advocate a transition away from a growth-oriented national strategy, and there are those who defend economic growth as desirable and necessary for providing the resources for maintaining the standard of living and preventing various societal stresses and disruption.

The spread of policy alternatives for selecting a growth strategy range from steady-state economy at one end to that of continual growth at the other end.

I doubt that any of the participants in this debate dispute the need for meaningful management of our resources, but there is no clear consensus as to what this management should entail.

Together with increasing population, economic growth has been claimed by some to lead ultimately to disaster because of the demand that continually rising production places on the Earth's nonrenewable resources and on the ability of the environment to absorb the waste.

Others, however, assert that economic growth is necessary for maintaining full employment and the standard of living, and that a variety of such social and economic mechanisms as the price structure and technological advances will permit continued national growth without disaster.

I believe we are in a period of transition, and the people are concerned about the future and the ability of our public and private institutions to provide the necessary leadership.

There is a prevalent sense that forces are at work threatening many traditional American values and that we may be heading into a more difficult period.

We may be on the course to a new form of economic equilibrium, which could result in wrenching adjustments to different values and goals, or to world and national collapse, which is the most adverse prediction.

Today's hearing, "The Future of Growth and the Environment," will provide an overview of the various issues of national growth and will permit us to improve our understanding of the interaction between economic growth, population, technology, resource depletion, and the environment.

More specifically, we will look at the future directions and prospects of growth, the desirable and necessary changes in the institutions and policies affecting national growth, what are the alternative growth strategies and rates, what are the necessary positive actions that must be taken.

We will have the opportunity to measure what is happening so that our capacity for reasoned public policy is improved. It is important to

analyze the limits to growth debate in order to evaluate the fundamental alternatives to our Nation's current politics and economics of resource exploitation and growth, and to avert any catastrophic collapse before it might happen. The national growth controversy involves fundamental questions about our institutions and future posture.

The excellent group of witnesses before us is well-qualified to address many of these questions, and I believe what they have to say will provide a cogent analysis of the important growth-related decisions facing us today. Hopefully their testimony will help us anticipate the problems sooner and make more rational policy judgments.

I wish to thank the participants for the comprehensive statements you have prepared. These statements will be made a part of the official record.

To permit us to have a meaningful interchange of questions and answers later this morning, I would appreciate each of you restricting your summary of the prepared remarks to a maximum of 15 minutes.

Our first witness this morning is Dr. Jay W. Forrester who is the Germeshausen professor of management at the Massachusetts Institute of Technology and author of such books as "World Dynamics" and "Urban Dynamics."

It is a pleasure to welcome you here, Dr. Forrester, and you may proceed any way you wish.

STATEMENT OF DR. JAY W. FORRESTER, GERMESHAUSEN PROFESSOR OF MANAGEMENT, SLOAN SCHOOL OF MANAGEMENT, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Mr. FORRESTER. This hearing on "The Future of Growth and the Environment" takes place between the first and second phases of the growth debate. The first phase, extending over the last 5 years, saw the subject of limiting growth move from being ridiculed to being the central question of our times. The second phase, probably to extend over the next 10 years, will be an exploration of the problems involved in shifting from growth to stable socioeconomic equilibrium.

FIRST PHASE OF THE GROWTH DEBATE

Prior to 1970, many persons had written about the threat from growing population, inadequate food, and dwindling resources. But almost none of the implications had penetrated into public expectations, chamber of commerce boosterism, or government debate. However, over the last 5 years, rising environmental pressures, combined with the impact of the world dynamics and limits to growth books and the increased public recognition of earlier writers on population and environmental issues, forced the question of future growth into public debate.

By 1972 and 1973, the issue of growth and environmental limitations could no longer be ignored. Opponents could no longer simply refuse to recognize the questions being raised; limitation on growth became an idea to be vigorously attacked. Any ending of growth was seen as contrary to the American tradition. Those who suggested that growth could not continue and that persistence in holding to the growth ethic would lead to still greater difficulties were dismissed as doomsayers.

But time is beginning to show that those who anticipated major changes in structure of our social and economic life were not doom-sayers but instead were the realistic optimists. They were not optimists of the conventional wisdom tied to a blind continuation of past trends. Instead, they were optimists who believed that the public could understand, would react, and had courage to face a new social challenge.¹

Time and logic have been on the side of those who foresaw a clash of social, economic, and environmental pressures. As often happens, the public has perceived the changing circumstances before professionals and officials. A recent public opinion poll shows a majority of the public believing that the trends of the past will not continue, that the standard of living will decline, and that they are willing to face the issues. An even higher majority show disappointment that their elected officials are failing to address the difficult problems and share with the public the hard truths. This Senate hearing may mark a turning point leading to a new realignment of public concerns and official action.

SECOND PHASE OF THE GROWTH DEBATE

The first phase has put control of growth on the national agenda. But growth is a consequence of the socioeconomic system; it is not something that can be influenced or even debated directly. Action must be considered in terms of restraint on rising population, restriction on land usage, substitution of internal sources for imported energy and resources, realignment of future expectations for standard of living, limitation of immigration, and reexamination of trends toward capital-intensive and energy-intensive production. Control of growth means giving up certain traditional freedoms, but growth itself destroys freedom. The second phase must debate the tradeoffs between material, social, and political values.

The second phase of the growth debate must be more specific than the first. The second phase should grow from a more comprehensive understanding of the growth process than is yet available. Leverage points for change should be distinguished from symptoms that might be treated at great cost but to no avail.

The second phase must include identification of specific alternative futures and the means of reaching them. By weighing relative advantages of different futures and the social costs of achieving them, a road to the future can be charted. If the choice is not made intentionally on the basis of informed debate, the choice will be made inadvertently by the happenstance of circumstances; but history does not encourage one to adopt a blind faith in happenstance.

Growth issues are far too complicated for effective handling through nothing more than classical discussion and compromise. Part of the second phase should be to develop further the Nation's ability to analyze and understand the dynamic interrelationships between population, environmental restraints, economics, technology, social change, and politics.

GROWTH AND THE ENVIRONMENT

This Senate hearing approaches growth from a fundamental perspective—that of the environment. Growth becomes an issue only be-

¹ See Appendix C, "New Perspectives for Growth Over the Next Thirty Years," address at the Limits to Growth '75 conference, Houston, Texas, October 20, 1975; page 68.

cause the environment is finite and an array of environmental limits stand in the way of unlimited growth. Physical limits have become conspicuous as rising population in a fixed land area leads to crowding. From crowding comes an array of social stresses. Industrialization and the conversion of agriculture to a capital-intensive process have caused people to concentrate in cities with consequent strife and political friction. Growth into a fixed environment causes the entire spectrum of physical and social stresses to be interconnected.

It has become trite to say that "everything is connected to everything else," yet that is one of the most fundamental descriptions of how our social system has changed. Before there was crowding, space separated various human activities. Because of relative isolation, social friction was low and the need for policing, regulation, restraint, and governmental intervention were at a minimum.

But as environmental limits began to restrict expansion, further increase of population and industrialization have meant more crowding. As environmental capacity becomes more precious and more people lay claim to it, conflict and compromise take a rising toll of human energy. For example, the cost per capita of city government rises rapidly with increasing population density.² The social overhead of Government is becoming a substantial factor in causing inflation. The frustrations generated by environmental constraints divert energy from production of food and goods. Social, political, and economic stresses are all interconnected. Temporarily relieving one symptom only causes stress to break out somewhere else as long as total demands on the environment continue to increase.

POPULATION

And from whence come the rising demands that cause politics, economics, technology, and quality of life to be so tightly interconnected? The fundamental underlying generator of rising demand is rising population. For any specified technology, population multiplied by standard of living determines the food, energy, and space required. Inevitably at some point, rising population and rising expectations for standard of living clash with the environmental capacity. As the capacity of the environment is reached, a trade-off must be made between population and standard of living. A larger population means a lower standard of living. For a time, the need for a trade-off between the two may be obscured by improvements in technology that wring more output from the environment, but the cost of ever-heavier encroachment on the environment becomes progressively higher and the process must at some point falter. Rising population in a fixed environment generates an interconnected ensemble of physical, social, economic, and political stresses.

Most people think the "population problem" exists only in underdeveloped countries and not in the industrialized countries. But the reverse is probably more true. Developed countries have been living on energy, resources, and food from underdeveloped areas. But the underdeveloped areas will more and more need their own output. The developed countries probably cannot sustain their present standards of living from within their own borders. In other words, the developed

² See Appendix B: "Control of Urban Growth," by Jay W. Forrester, given as the keynote address in 1972 at the annual meeting of the American Public Works Association, page 54.

countries have an overextended population at their present standards of living compared to their own environmental capacities. As an example, many people are surprised that population density in Massachusetts is half again greater than the average population density of India; and Massachusetts may be in no better position to support its population from within its own environmental capacity than is India.

The trade-off between size of population and standard of living is the first clear issue of fundamental importance that can emerge in the second phase of the growth debate. The United States is now in a crossover situation in which population continues to rise while the supply of many natural materials declines. Internal renewable resources become fully committed while imports diminish in availability and increase in cost. Present birth rates will apparently carry population to some 60 percent above the present level by the year 2030 and, in addition, immigration is running at about 20 percent of the birth rate.

As soon as rising population is accepted as an issue of primary importance, the next step will be to examine alternatives for action. In our present society there are tremendous coercions to increase population. Higher population is encouraged by social traditions, religions, commercial advertising, laws, and tax policy. If these influences were only reversed, producing the opposite direction of coercion but no higher level of total coercion, population might be stabilized without more repressive measures. The issue of population is urgent because the longer we wait the higher will be the price in lowered standard of living and loss of future freedom.

Environmental quality and standard of living can no longer be separated from the question of an optimum population.

UNDERSTANDING THE GROWTH PROCESS

The diverse views and sometimes shrill tone of the growth debate have shown how poorly the growth process is understood. Growth is part of a complicated system. It involves population, technology, values, politics, and the environment. The human mind can perceive the separate parts of the total system but not the implications of those parts all interacting with one another.

Technically speaking, the socioeconomic system belongs to the broad class of systems described by differential or integral equations. Engineering systems, as in the control of chemical plants or space flight, belong to the same class of systems. Although such technological systems are far simpler than the counterparts in society, no engineer would presume to analyze their behavior by inspection, thought, debate, and compromise. He would instead use laboratory models and computer simulation to arrive at an understanding of behavior. Yet, when we turn to the far more subtle and complex systems of society, we elect a man to Congress, pat him on the back, send him to Washington, and expect him to solve by debate the dynamics of a system that would baffle one trained in complex systems.

Those in government are losing public confidence not because they are doing less well than others could, but because they are attempting an impossible task, given the inadequate traditional tools of discussion and compromise. Fortunately, more suitable methods are coming

into existence. The second phase of the growth debate must rely on more comprehensive analysis if it is to succeed. I believe that more comprehensive analysis can be achieved through the use of system dynamics methods to organize social and economic relationships into models whose implications can be examined by computer simulation.

A word is in order here regarding the role of the *World Dynamics* and *Limits to Growth* books in changing attitudes toward the growth debate over the last 5 years. The books contained almost nothing new. Essentially all their content had already been said by other writers in previous decades. Why then has *Limits to Growth* appeared in some 30 languages and sold over 3 million copies? Why has "limits to growth" become a standard phrase in language used by press, public, academia, and government? I believe the impact comes from the new communication medium that lies at the foundation of the books. Both books were based on system dynamics computer models for combining and clarifying ideas that before had existed only in spoken and written language. Descriptive writing and public debate are not adequate tools to deal with the complexity of modern socio-economic systems. Language is slippery and imprecise. Debate cannot cope with the future time-varying implications of presently known social structures and policies. But the language of the computer model forces clarity, precision, and completeness. The model provides capability to determine future consequences of present assumptions. Books founded on a system dynamics model can be absolutely internally consistent; their assumptions can be shown to lead to the described consequences; policy alternatives can be traced with certainty to the corresponding alternative futures. But two other attributes are needed in addition to internal consistency. The book, its assumptions, and its recommendations must be relevant to important social issues, and they must be consistent with the reader's frame of reference. The two books addressed concerns of the public. The books were consistent with the social structures, environmental pressures, and economic changes that people were encountering. The books were perceived as having a validity in the real world that had not been matched by descriptive treatments of the same issues or by more abstract and simpler models that had been used in the social sciences. The role of computer models of the system dynamics type has been important to the first phase of moving the growth debate toward the center of political issues. But system dynamics models can be even more important in the next decade in resolving the growth questions now on the national agenda.

As a step toward a better understanding of growth, the system dynamics group at the MIT Sloan School of Management has been developing a model of social and economic change in the United States. This system dynamics national model combines a wide range of dynamic structures that span from short- to long-term issues in the society.³

The national model is now being assembled. Most of the major sectors exist and are undergoing separate test. The model contains details of financial accounting, production, and acquisition of some 12 input factors of production in each of 15 industrial sectors. It handles

³ See app. A, "Business Structure, Economic Cycles, and National Policy," by Jay W. Forrester as presented Oct. 7, 1975, at the annual meeting of the National Association of Business Economists, page 11.

labor and professional mobility between sectors, each with independent unemployment pools. A demographic sector generates birth and death rates so that population age distribution is available for studying the difficulties now being encountered by social security and private retirement plans. Commercial banks, savings institutions, and the Federal Reserve policies and financial flows are incorporated. Environmental limits appear in the energy and resource sectors and in land availability. New technology arises from the sector providing education and research. Price changes, wage setting, and money flows are included. Consumption sectors buy goods, food, services, and housing.

The model is especially suited to dealing with growth issues because of the way it bridges from today's detailed actions within the society to the long-term future consequences. The growth debate will be a debate about present action and future implications; it will be a debate about short-term price to be paid for long-term benefit. The growth debate will couple the short-term interests of various constituencies with the long-term public welfare. A vehicle for research is needed that can couple present social and economic structures and policies with both short- and long-term reactions within the socioeconomic system. Managing the growth debate and the consequent political action will be a process of striking a just and viable compromise between conflicting arguments arising from the immediate effects versus future effects.

By combining structures producing short-term behavior with structures generating long-term behavior, the national model is particularly well suited as a tool in studying growth policy. By bridging from the short-term business cycle to the long-term life cycle of growth, the model should help resolve many of the current economic and political confusions. For example, the present debate about inflation versus unemployment and appropriate Federal Reserve policy is being carried on within the conventional business-cycle frame of reference. Yet it is probable that two other dynamic modes of our social system may be clouding the issue. Many of the present symptoms are probably being misinterpreted because they come not from the business cycle but from either a 50-year cycle arising from the accumulation of physical capital or from the environmental pressures arising from the life cycle of growth. Therefore, this panel, as it addresses questions of the environment, stands at the intersection where most other problems of the society converge.

ABSENCE OF GOVERNMENT RESPONSIBILITY

The growth debate encompasses every aspect of our society. The problems arise not from individual sectors of the social system but from how those sectors interact. Yet no element of Government accepts responsibility for the whole system. Congress is divided into committees each dealing with pieces of the action. The executive department likewise has no capability adequate to the task of understanding the interactions between Government spending, public debt, money creation, transportation, energy imports, food production, resource shortages, population growth, immigration, inflation, labor movement toward the cities, exports, and various forms of taxation. Yet it is from these multiple interactions that today's stresses are arising. I hope

this panel can initiate discussion toward creating a responsibility and a capability for dealing with the dynamic interconnections. "Everything effects everything else." It is time to turn that statement from a lament and an excuse into a plan for achieving better understanding.

RECOMMENDATIONS

Based on the preceding comments, four recommendations emerge for dealing with interactions of growth, population, and the environment:

1. Alternative futures

Move toward debating specific alternatives for stable futures and means for achieving them. Debate about growth in the abstract is not productive. It is time to be specific and to present the public with concrete alternatives so that the hard choices come into sharp focus.

2. Population versus standard of living

Introduce the tradeoff between population and the standard of living as a specific part of the growth debate. Environmental capacity eventually must limit the total output from nature. As population continues to rise, there will inevitably be less per capita, regardless of the productivity and the technology that one assumes. Population, by pushing against resource and space limits, is generating most of the other stresses in society. The population issue is fundamental to questions of growth and the environment. This is true in the developed countries even more than in the underdeveloped countries.

3. Development of social modeling

Support development of comprehensive socioeconomic models. The latest advances in social modeling and use of computers for simulating behavior of comprehensive interconnected socioeconomic systems make possible a far better understanding of social change. System dynamics models played a central role in phase 1 of the growth debate while growth was being established as a major item on the national agenda. System dynamics models can be extended to deal with phase 2 of the growth debate if adequate funding is made available. Such models can handle interrelatedness between sectors of the social system. They can bridge between short- and long-term questions that are central to how we get out of the growth mode and into a more viable future that is compatible with the environmental constraints.

4. Governmental responsibility for interconnectedness.

The U.S. Government needs a capability for handling complexity of interrelatedness between multiple aspects of national life. Functional assignments now restrict congressional committees and executive departments to limited aspects of the socio-economic system. No one is adequately dealing with dynamics of the whole. It is from interactions between the parts, not from deficiencies within the separate parts, that our major national pressures increasingly arise. But dealing with dynamic complexity is a new area of research. It should not be concentrated in a single organization lest too narrow a viewpoint and inappropriate methods lead to failure at a time of great national urgency. I recommend several competing responsibilities be assigned to deal with dynamics of the national system. Each assignee should

develop suitable methods and search for practical answers to pressing questions. Congress should have a capability, the executive department should have independent and competing responsibility, and several private groups should be established. Out of the competition should come new light on questions that have been too long deferred. The duplication of effort will be a small price to pay for greater assurance of success.

[Attachments to Mr. Forrester's statement follow:]

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BUSINESS STRUCTURE, ECONOMIC CYCLES, AND NATIONAL POLICY

by

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National Association of Business Economists

17th Annual Meeting

Boca Raton, Florida

October 7, 1975

(I will appreciate receiving from
readers of this paper comments and
criticisms that can guide future revisions or the direction of further work
--J.W.F.)

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ABSTRACT

A system dynamics model of the national economy is now being assembled. Preliminary studies show that the production sectors can generate three different modes of fluctuation in the economy similar to the 3-to-7 year business cycle, the 15-to-25 year Kuznets cycle, and the 45-to-60 year Kondratieff cycle. These several modes arise from the basic physical processes of production and the managerial policies governing inventory, employment, and capital investment.

The three modes of economic fluctuation are easily confused. The symptoms of all have tended to be interpreted as if they belonged only to the business cycle, perhaps leading to inappropriate policies that account for part of the present national disappointment and frustration.

The work is still in progress, but results to date point to the following tentative observations for discussion:

- a. Several simultaneous periodicities of economic fluctuation can exist in the economy at the same time.
- b. Basic industrial structures and management policies can generate not only the business cycle but also the Kuznets cycle of some 18 years duration and the Kondratieff cycle of some 50 years duration.
- c. The 3-to-7 year business cycle seems to be caused primarily by interactions between inventories and employment.
- d. Capital investment probably has less to do with contributing to the business cycle than it has in generating the longer Kuznets and Kondratieff cycles.
- e. Monetary policy, to the extent that it works through investment in plant and machinery, may have little influence on the business cycle.

- f. Mild recessions since World War II can be explained by the rising phase of the Kondratieff long wave rather than as a consequence of post-war monetary policy and "fine tuning."
- g. The greater severity of the present recession may indicate the top of a Kondratieff long wave of capital expansion.
- h. Confusion between the business, Kuznets, and Kondratieff cycles may cause symptoms to be misunderstood and counter-productive national policies to be adopted.
- i. The Phillips curve relationship between the rate of wage change and unemployment seems to belong to the internal dynamics of the business cycle. As such it probably lies beyond the effective reach of monetary policy.
- j. Because the Phillips curve and monetary policy belong to different economic substructures and probably to different dynamic modes, the Phillips curve is a weak guide to either monetary policy or actions to cope with long-term unemployment.
- k. Recent increases in unemployment may not come from the business cycle but from the long-term Kondratieff cycle at the end of the phase of over-investment in capital equipment.
- l. The belief in a tradeoff between inflation and unemployment may be erroneous with the result that increased money supply fails to relieve unemployment but does produce inflation.

If the preceding observations are correct, they have major implications for government and business decisions. Even a small probability of their being valid justifies a high priority for further analysis, extension of the model from which they come, and refinement of assumptions and evaluation.

D-2245-2

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A method new to economic analysis is now being applied to examining social and economic change at the national level. The "system dynamics" approach had previously been developed as a way to relate corporate policies to their resulting behavior, such as growth, employment stability, and changes in market share. A system dynamics model is very different from the more common econometric models by being drawn from a much broader information base, by representing more generally the nonlinear character of real life, by containing a deeper internal substructure of policies, by including social and psychological variables as well as the strictly economic variables, and by having the objective of choosing between alternative policies for achieving long-term improvement of the system rather than the objective of short-term forecasting as a basis for current decisions.

In constructing a system dynamics model, one draws heavily on the knowledge of structure and policies already being used by managers, political leaders, and the public. From the available wealth of information, some already available in written and numerical form

but much drawn from experiences and observations residing in people's heads, a computer simulation model is constructed. The computer model plays the roles of the separate parts of a social system according to knowledge about corresponding parts of the real system. A good system dynamics model can be related at every point in its structure and policies to corresponding knowledge about parts of the actual system it represents. In operation, the model should reproduce the same modes of behavior seen in the actual system and should exhibit the same kinds of successes, failures, and problems.

From the model, which is a captive replica of the actual system, new insights emerge about causes of behavior and the effectiveness of alternative policies.

Such a model for social and economic change in the United States is now partially assembled. The industrial sectors of the model are further advanced than other parts and are already yielding suggestive insights into present behavior of the economy.

A. SIMULTANEOUS MODES OF ECONOMIC FLUCTUATION

In the complexity of an economic structure, many different dynamic modes of fluctuating activity can exist simultaneously. Much puzzling economic behavior can arise from multiple modes superimposing their patterns of interaction. If the separate identities of the different modes are not recognized, their many symptoms will be confused and, as a consequence, inappropriate or counterproductive policies may be adopted.

An extensive literature exists on each of three different modes of periodic fluctuation in the economy--the business cycle, the Kuznets cycle, and the Kondratieff cycle.*

The business cycle is the well known short-term fluctuation of business activity. It appears as varying production rates and employment

*See References 1-5

with peaks of activity separated by some three to seven years. The business cycle lies within the experience of most persons and is the focus of attention in the press and in governmental policy debates.

The Kuznets cycle is much less generally recognized. It exists as a statistical observation that many time series in the economy seem to fluctuate with a periodicity of some 15 to 25 years. Cause of the Kuznets cycle has been a subject of debate. Other cyclic modes in the economy are of sufficient magnitude to mask the Kuznets cycle from popular awareness.

The Kondratieff cycle (also known as the "long-wave") was forcefully presented in the literature by Nikolai Kondratieff in the 1920's. Kondratieff was a Russian economist who made extensive studies of long-term behavior of the Western capitalist economies. His statistical analyses of economic activity showed that many variables in the western economies had fluctuated with peaks about 45 to 60 years apart. Such peaks of economic activity have been placed around 1810, 1860, and 1920. Kondratieff believed that the 50-year cycle was caused by internal structural dynamics of the economic system, but he did not propose a sharply-defined set of mechanisms. Most other economists took the position that the long-term fluctuation had occurred but that it was caused by events external to the economy, such as gold discoveries, wars, major technical innovations, and fluctuations in population growth.

Simulation studies with the new System Dynamics National Model of the economy have shown that realistically modeled physical and policy relationships in the production of consumer durables and capital equipment can generate simultaneously all three major periodicities--business cycle, Kuznets cycle, and Kondratieff cycle. The short-term business cycle can result from interactions between backlogs, inventories, production, and employment without requiring involvement of capital investment. The Kuznets cycle is consistent with policies governing production and the acquisition of capital equipment.

The 50-year Kondratieff cycle can arise from the structural setting of the capital equipment sector, which supplies capital to the consumer goods sectors but also at the same time must procure its own input capital equipment from its own output.

B. THE SYSTEM DYNAMICS NATIONAL MODEL

The System Dynamics Group at the M.I.T. Sloan School of Management has been developing a system dynamics model of the national economy. The model contains some fifteen industrial sectors, worker mobility networks between sectors for both labor and professionals, and household, demographic, financial, and government sectors.* The National Model is being constructed according to system dynamics model-building principles which include:

- a. Decision-making within each sector is modelled on widely observed business and government practice. (It is not based on a theory of "optimal economic equilibrium").
- b. Special attention is given to accumulations--reservoirs or buffers--such as inventories of inputs and finished stock, employee pools, bank balances, accounts payable, and order backlogs. Such accumulations decouple rates of flow from one another and thereby make it possible to model changes that occur in economic activity when rates of flow are out of equilibrium.
- c. Highly nonlinear relationships that exist in reality are incorporated. Much of the information we possess about the actual economic system relates to limiting conditions, ultimate consequences of maximum pressures, and physical restraints on action. Such nonlinearities have a profound effect on behavior and must be incorporated if a model is to be realistic.
- d. Quantitative computer simulation is used to derive the qualitative behavior of the system, that is to discern the various possible modes of behavior and how they can be influenced by changes in policies at various decision points within the system.

*See Appendix A for a brief description of the System Dynamics National Model.

Model development is still underway. But already, most sectors have been individually formulated and are under test. Sub-assemblies with various arrangements of multiple sectors have been examined.

Even at the present partial assembly stage, behavior is seen that raises important questions about current economic policy. The discussion in this paper focuses on economic fluctuations that are implicit in the structure of the production sectors of the economy.

C. THE PRODUCTION SECTOR

Production sectors are the heart of a national economy. In the System Dynamics National Model, production sectors are created by replicating a set of master equations that represent a standard production sector. The standard sector can then be specialized to represent each different kind of production sector by providing the appropriate initial conditions and parameter values. The standard sector will be replicated with suitable sets of coefficients to represent consumer durables, consumer soft goods, manufacturing equipment, heavy capital equipment, building construction, agriculture, resources, energy, services, transportation, secondary manufacturing, education, research and creation of new technology, family self service, military expenditures, and government services.

The standard production sector reflects the internal structure and policies of a typical industrial firm. It contains a full accounting system, order backlog, inprocess and finished inventories, production depending on several input factors, inventories and backlogs for each factor of production, and ordering functions that procure the various factors of production. Ordering functions exist in each production sector for each of some ten factors used in production.

The ordering functions are the primary generators of dynamic behavior. An ordering function creates orders for its input factor by

reacting to demand for the finished product, condition of the sector, and supply of the factor. It does so by recognizing order backlog and inventory of the sector output, price of the output, average shipping rate, marginal productivities of factors of production, inventory and backlog of the input factor, price of the input factor, delivery delay of the input factor, financial condition and profitability of the sector, interest rates, and short-term and long-term growth expectations.

Figure 1 shows a much simplified diagram of the production sector as used in the National Model. For the behavior discussed here, the financial and pricing parts of the sector are not active; the focus is on physical changes in inventory and backlog of output and in the stocks of the input factors to production. Figure 1 shows a very simplified output section of the model and two abbreviated ordering functions, one for capital equipment and the other for labor.

In the output section of Figure 1, orders enter a backlog, and the relationship between backlog and available inventory of output determines ability to ship product as represented by delivery delay. Inventory is increased by production and decreased by shipments. Output information includes the condition of inventory, backlog, shipments, and marginal productivities of the factors of production.

In the two ordering functions for capital and labor in Figure 1, the decision to acquire more of either factor of production is based on multiple inputs. Shown here symbolically are the information streams from the sector output, the inventory of the factor, and the backlog of unfilled orders for the factor. In addition the ordering function uses financial variables, changing availabilities of the factors, expectations, and prices.

The structure of a production sector and of the interconnecting relationships is complex enough to cause many different modes of dynamic behavior.

D. THREE PERIODIC MODES IN THE PRODUCTION SECTORS

Simulation studies with the industrial sector of the National Model suggest that even this limited part of the whole economy can

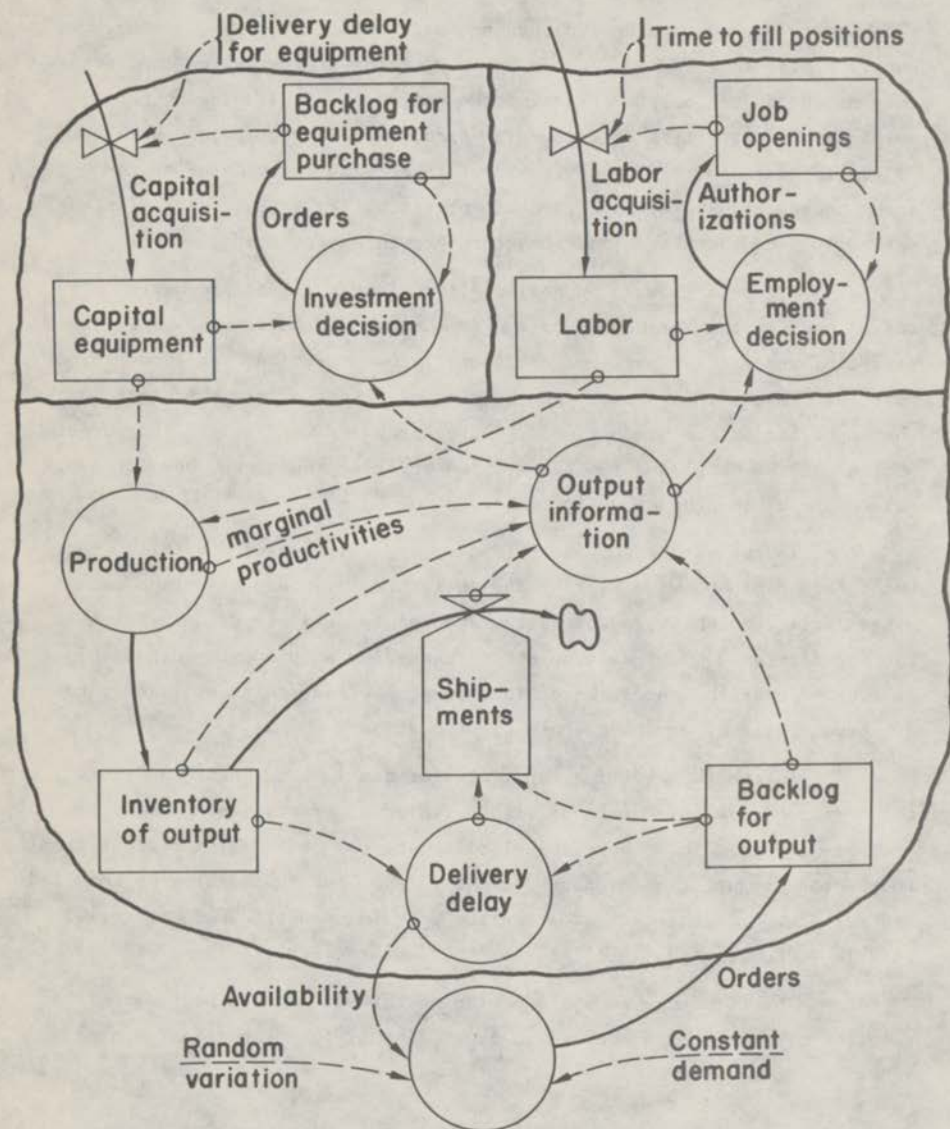


FIG. 1 Major Components of Industrial Sector

simultaneously generate a wide range of periodic fluctuations. In other words, several different modes of cyclic behavior originate from the interactions of inventories, production rate, acquisition of labor and capital, and the supply interconnections between different sectors. The internal dynamics of typical production sectors seem sufficiently diverse to simultaneously generate the business cycle, the Kuznets cycle, and the Kondratieff cycle.

The several modes of behavior discussed here are internal to the production sectors themselves and are not induced by broader aspects of the economy such as changes in consumer income, prices, or interest rates. To observe the inherent characteristics of first one sector and then a combination of two production sectors, the tests described here use a constant demand for sector output modulated by availability of the product as would occur in an actual market. In the short run, as delivery delay increases, the demand generator orders further ahead in anticipation of need and causes the order backlog to rise. In the longer run, as delivery delay increases, the unavailability of product discourages demand and causes some decrease in orders.

Behavior will be examined in three stages: first with one sector using only labor as a variable factor of production to exhibit the business cycle, second with one sector varying both labor and capital to exhibit the Kuznets cycle, and third with two sectors both varying labor and capital to exhibit the Kondratieff cycle.

1. The Business Cycle

Figure 2 shows behavior of a single production sector for consumer durables when capital equipment is held constant and production rate is changed by variations in labor only. A monthly, five per cent, random variation is superimposed on the incoming order rate to induce the sector to respond according to its inherent dynamic periodicities.

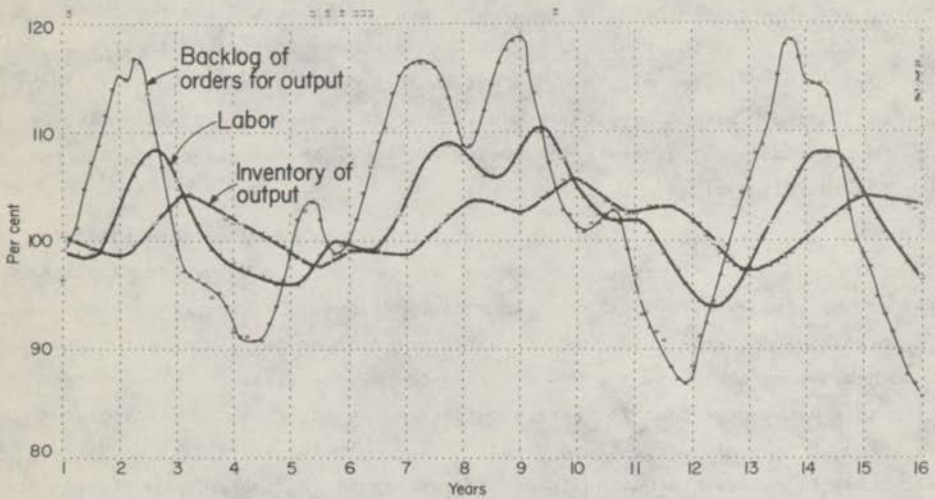


Figure 2. Business cycle fluctuation appearing in labor, inventory, and backlog.

In Figure 2 the production sector is generating a sequence of fluctuations typical of the normal business cycle. Intervals between peaks vary around five years. Relative timing of backlog, production rate as shown by labor, and inventory are typical of industrial behavior.

The significance of Figure 2 lies in its generation of the business cycle without variation in consumer income or capital investment. Prices are not changing, demand is constant on the average, money and interest rates are not active, and capital investment is not involved. The cyclic fluctuation in Figure 2 has the major characteristics of the business cycle and arises from the interaction of backlog, inventory, production, and employment. This is not to suggest that the business cycle operates without influencing other

activities in the economy. But Figure 2 does raise the question of whether consumer income, investment, and monetary changes are central to the generation and control of the business cycle or are merely induced by variation arising from employment and inventories.

The fluctuating, business-cycle-like behavior in Figure 2 arises from the policies that control employment in response to inventories and backlogs. Such policies tend to amplify disturbances and to convert short-term random disturbances into an irregular wave that reflects the natural oscillatory character of the system structure.

The reason for amplification and overshoot of employment and production can be seen by tracing an increase in demand through the structure of Figure 1. Assume that a constant demand has existed for consumer goods and that from this equilibrium condition demand suddenly increases slightly. The first consequence is an increase in orders, increase in the backlog for output, increase of shipments, and reduction of inventory of output. The increase in backlog and depletion of inventory continue until management has confidence that the new higher level of business is not an aberration and until additional factors of production (labor in this example) can be acquired to increase production. Between the time demand increases and the time that production rises to equal the new demand, three things occur. First, backlog for output increases to an undesirably high level; second, inventory of output is depleted below its initial desired level; and third, because demand is now higher than before, more inventory than at the beginning is needed to service the higher demand, and therefore desired inventory (not shown in Figure 1) rises higher than at the beginning. As a consequence of these changes, when production has risen to equal demand, the system is out of equilibrium. Backlog for output is too high, and inventory is too low. With production equal to demand, the new state of disequilibrium could be sustained but cannot be brought back into balance. Production must be pushed higher than the new demand to reduce the backlog for output, and to increase inventory not only back to its old value but up to the new higher desired level. When

inventory and backlog reach the desired levels, production is apt to be too high so that inventory continues to rise and further corrections are necessary.

It is from many such kinds of depletions of stocks and the need for excess responses to recover from the imbalances that fluctuating modes of the economic system arise. Disturbances propagate through the system by changing a stock from a desired level, setting up a discrepancy between actual and desired conditions, activating a policy to start a corrective sequence, and progressively working through a cascade of stages. Time lags in the system delay action and eventually induce corrections greater than the initiating disturbance.

This preliminary examination of industrial structure suggests that the business cycle primarily involves inventories and employment. Capital investment, although it will show fluctuation induced by the business cycle, need not be a necessary participant in creating the short-term business cycle. Furthermore, the business cycle can exist without inputs from money supply, interest rates, or changes in consumer income. Therefore, monetary policies aimed at diminishing the business cycle through affecting investment may be coupled only very loosely to the primary causes of business-cycle fluctuation, and, therefore, provide little leverage for influence.

2. The Kuznets Cycle

When realistic parameters for procurement of capital equipment are inserted in the simulation model of an industrial sector, dynamic behavior suggests that investment is primarily a part of the Kuznets cycle, not the short-term business cycle. The processes of investment are too slow to interact effectively in a cycle of only a few years duration.* The conservatism and therefore delay in committing

*Of course, some earlier authors have also argued that the delays involved in movement of physical capital are too long for the dynamics of capital investment to be an essential cause of the business cycle; see Abramovitz, Reference 6, page 242. For a detailed discussion of an industrial sector simulation model very similar to the one used for this paper and for a detailed analysis of business cycle and Kuznets cycle behavior, see Mass, Reference 7.

capital funds, the long planning time for new plant and machinery, the substantial delays in procuring new physical assets, and the 10-to-60-year life of equipment and buildings, all describe managerial and physical relationships suitable for creating fluctuation of 15-year to 30-year periodicity. Furthermore, the basic processes of production, procurement, and accumulation of capital plant are capable of creating the intermediate cycle without changes in monetary policy, interest, or consumption.

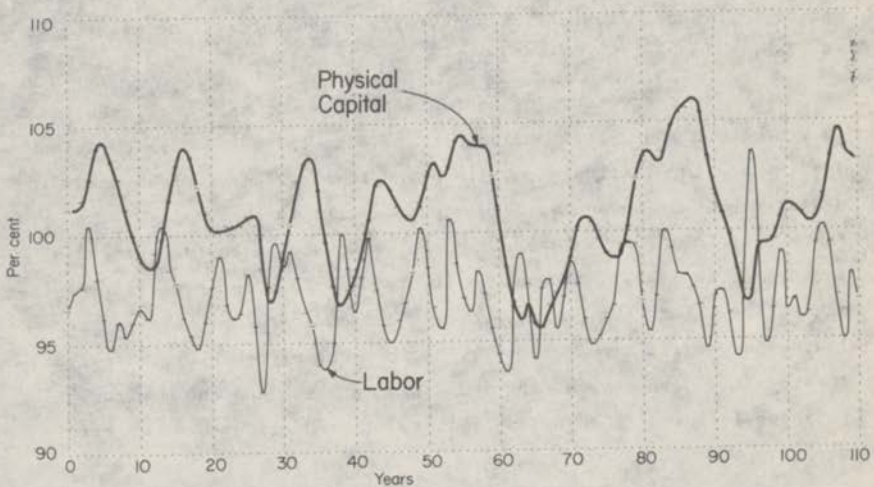


Figure 3. Kuznets cycle in capital and business cycle in labor as factors of production.

Figure 3 shows the behavior of the structure in Figure 1 when both capital equipment and labor are varied as factors of production. Capital equipment differs from labor in having longer times for planning and procurement, and in having a depreciation time much longer than the

average length of employment of labor. As before, the sector is supplying to a constant demand that is influenced by availability of the product and perturbed by a random disturbance. Two curves are shown in the figure, one for labor as a factor of production, the other for physical capital as a factor of production.

The labor curve in Figure 3 again exhibits a periodicity typical of the business cycle. The curve appears more compressed than in Figure 2 because of the changed time scale.

The curve in Figure 3 for physical capital existing in the sector also shows fluctuating behavior, but the interval between peaks is clearly longer than for labor.

The consequence of adding capital equipment procurement is to produce an additional periodicity of some 15 to 25 years duration. In Figure 3 the internal dynamics of capital equipment procurement in a single production sector show a periodicity in the range of the Kuznets cycle. In this example there is no active capital-producing sector, so capital is assumed available at a constant typical procurement delay. Both the business-cycle-like mode and the Kuznets-cycle-like mode coexist simultaneously. Both modes of behavior arise from the physical structure of the industrial process and the management policies followed in adjusting factors of production to an uncertain demand.

To the extent that interest rates affect investment, they should relate to the Kuznets cycle more than to the business cycle. But many businessmen would agree that demand, availability, existing plant, and shortage of labor have, over the last 30 years, been much more influential in investment decisions than have interest rates. If interest rate fluctuations are not necessary for creating the Kuznets cycle, and if physical variables have more influence, one is left with the possibility that monetary policy may be inadequate for influencing the capital investment (Kuznets) cycle.

3. The Kondratieff Cycle

The Kondratieff cycle is a fluctuation in the economy of some 50 years between peaks. In shape it is characterized by sharp peaks in economic activity separated by long valleys of stagnation.

The Kondratieff wave has not been taken very seriously because of absence of a convincing theory of how it could be caused. Nevertheless, events since Kondratieff first discussed the long wave are bringing the subject back into the public press. After the peak in economic activity around 1920, the Great Depression of the 1930's represented a typical low point in such a cycle. Now, some 50 years after the preceding peak, economic activity has again risen to a high level, but with many signs of faltering. The question arises, is the Kondratieff wave of underlying structural origin, and does it have significance for current policy?

Recent computer simulations suggest that a long-period cyclic behavior can arise from the physical structure connecting consumer goods sectors and the capital sectors. A sufficient cause for a 50-year fluctuation lies in the movement of people between sectors, the long time to change production capacity of capital sectors, the way capital sectors provide their own input capital as a factor of production, the need to develop excess capacity to catch up on deferred demand, and the psychological and speculative forces of expectations that can cause overexpansion in the capital sectors.

Figure 4 shows two interconnected production sectors. One sector has parameters for inventories and the time required to change production typical of a consumer durables sector and the other typical of a capital equipment sector. The consumer durables sector orders capital equipment from the capital equipment sector and has labor freely available (the labor mobility network for interconnecting labor flows between sectors is not active). The capital equipment sector also has labor freely available but orders its capital equipment as a factor of production from

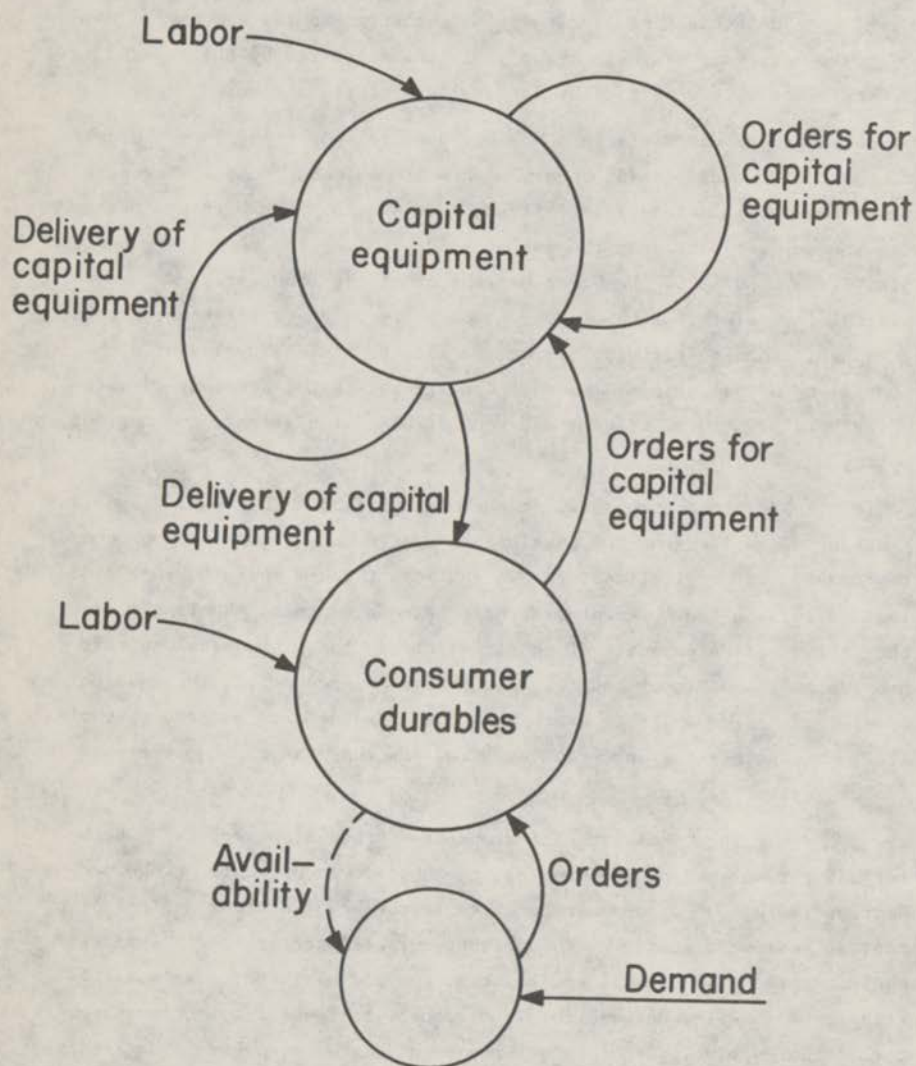


Figure 4. Two-sector structure of consumer durables and capital equipment.

its own output. This reentrant structure implies that an increase in demand for consumer durables would cause the consumer sector to try to increase both of its factors of production. It can obtain labor, but when it wants more capital equipment, the capital sector must expand. But if the capital sector is to expand in balanced manner, it needs both labor and capital as inputs. A "bootstrap" operation is involved in which the capital sector must withhold output from its customer (the consumer sector) so it can expand first in order to later meet the needs of the consumer sector. Such an interrelationship of sectors can create a mode of behavior not seen in either sector separately.

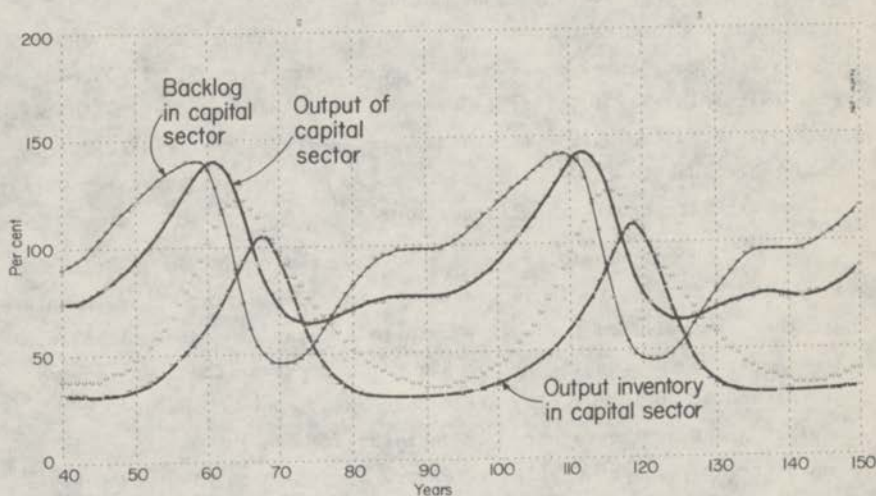


Figure 5. Kondratieff cycle appearing in the capital sector.

In Figure 5 the two-sector industrial structure shows a long fluctuation in the capital sector of some 50 years duration. The shape has similarities to the classical description of the Kondratieff wave in which steep peaks in economic activity are separated by broad valleys

of depression. The model and its behavior in Figure 5 constitutes a theory of how the Kondratieff cycle can be caused.

Although the behavior behind Figure 5 is not yet completely understood and does not occur in all two-sector configurations, it seems reasonably certain that the processes of production and capital equipment procurement, and the relationship between consumer and capital sectors have the potential for producing a Kondratieff-cycle-like behavior. The mode of fluctuation in Figure 5 is strongly determined internally and is unstable for small variations and bounded by nonlinearities for large amplitude. Such a mode grows quickly from any triggering disturbance and tends to sustain itself. It is especially persistent and not easy to influence unless its nature is well enough understood to discover any available points of leverage. If such a mode exists in real life, it is probable that changes over the 50-year interval in psychological attitudes, propensity to take risks, and efforts to sustain the upward growth phase by monetary expansion will all tend to accentuate the fluctuation.

The most basic cause of the 50-year fluctuation in Figure 5 is similar to the mode in Figure 2 that involved depletion of inventory and then an amplified production rate to reestablish internal balance. To illustrate the counterpart in Figure 5, consider the U.S. economy at the end of World War II. After the Depression and the war, the capital plant of the country was depleted at both the manufacturing and consumer levels. Automobiles were worn out, housing was inadequate, commercial buildings were old, and production equipment was obsolete. The physical capital stock of the country was at low ebb. But to refill the depleted pool of physical capital in a reasonable time, like twenty years, required a production rate greater than would be necessary to sustain the capital stock once the pool was filled. In other words, the production rate required to replenish the depleted physical capital in an acceptable period of time was higher than could be sustained. The capital sectors would over-expand and then be forced

to retrench.

In more detail, the sequences in the long-wave mode, starting from the depression years at the bottom of the cycle, seem to be: 1) slow growth of the capital sector of the economy; 2) gradual decay of the entire capital plant of the economy below the amount required, while the capital sector is unable to supply even replacement needs; 3) initial recirculation of output of the capital sector to its own input whereby the capital sector initially competes with its customers for capital equipment; 4) progressive increase in wages and development of labor shortage in the consumer sectors that encourage capital-intensive production and still higher demands for capital equipment; 5) over expansion of the capital sector to a capacity greater than required for replacement rate in order to catch up on deferred needs; 6) excess accumulation of physical capital by consumers (housing and durables) and by durable manufacturers (plant and equipment); 7) developing failure of capital equipment users to absorb the output of the over-expanded capital sectors; 8) sudden appearance of unemployment in the capital sectors; 9) relative reduction of labor cost compared to capital to favor a shift back to more labor-intensive production that further diminishes the need for new plant; 10) rapid collapse of the capital sector in the face of demand below the long-term average needed by the economy; and 11) spreading discouragement and slow decline of the excess capital stock through physical depreciation.

Investigation of this long-wave mode is incomplete. Yet it is of sufficient potential importance that even preliminary hypotheses are worth serious consideration. Present symptoms in the economy seem consistent with the top of a Kondratieff wave when the top is viewed as a time of excess capital expansion. New tankers are leaving the shipyards and going directly to anchorage. Aircraft are going into storage. For the first time since the late 1920's, many cities have an excess of office space. The interstate highway system is nearly complete and another is

not needed soon. The condition of the auto industry only partly results from the oil shortage and is partly due to the consumer stock of automobiles having been filled. The financial plight of the real estate investment trusts and the decline in home construction suggest that we already have more housing than the economy can support. Most municipalities have built sufficient schools and hospitals.

If we are indeed in a condition of excess capital stock both at the industrial and consumer levels, the implications for business and economic policy are substantial. Under conditions of excess of capital plant, increasing the money supply will give little incentive to purchasing physical capital and instead may only feed speculative and inflationary forces.

E. POLICY MISINTERPRETATIONS FROM MULTIPLE MODES

As already shown, many different modes of behavior should be expected in the economy. For example, the business, Kuznets, and Kondratieff cycles each seem associated with different economic structures, so they can exist simultaneously and can superimpose their consequences. Such simultaneous modes can present confusing symptoms, especially if all are erroneously attributed to a single cause. Often, all economic behavior has been interpreted as belonging to the short-term business cycle. As a result, the longer-term modes go unrecognized, and their consequences are not foreseen.

If symptoms of economic change are attributed to the wrong mode of behavior, incorrect policy conclusions are apt to be drawn. Policies are then likely to yield actions that are ineffective or counterproductive.

The three modes of economic fluctuation discussed here and the structures from which they come suggest two possible misinterpretations in current economic thinking. First, monetary policy since

World War II has often been given credit for reducing the severity of recessions, whereas, the strong expansions and the weak recessions may merely reflect the way the three modes of cyclic fluctuation superimpose. Second, the so-called Phillips curve relationship seems to arise from the inventory-employment-wage substructure in the industrial sectors, and, as such, would give little guidance for how unemployment would respond to monetary policy, which exists in a rather different substructure of the economic system and relates primarily to other dynamic modes.

1. Business-Cycle Stabilization

Interaction between the Kondratieff cycle and the business cycle may have led to erroneous explanations of recessions and depressions, and to inappropriate policies for economic stabilization. Recessions since World War II have been less severe than those in the immediately preceding decades. Anti-cyclic monetary policy and "fine tuning" of the economy have often been given credit for reducing business downturns between 1945 and 1970. But another explanation grows out of considering how different kinds of economic fluctuations can combine.

Figure 6 shows three sinusoids as stylized representations of the business cycle, Kuznets cycle, and Kondratieff cycle.

(Text continued on page 22)

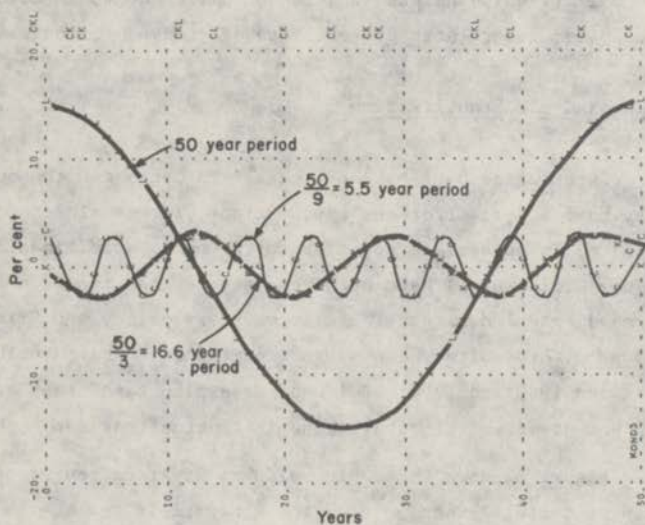


Figure 6. Three sinusoidal curves representing business, Kuznets, and Kondratieff cycles.

Figure 7 and Figure 8 are on an expanded time scale and show the simple sinusoids added together. The numbers give the time in years for economic expansions and contractions. Figure 7 covers the rising segment of the long wave and Figure 8 the falling segment. Note that the upward thrust of the long wave before the peak in Figure 7 gives business cycles the appearance of having strong and long expansions with weak and short recessions. By contrast, in Figure 8, which shows the falling phase after the peak of the long wave, the long-term decline weakens and shortens the expansion phase of the business cycle and deepens and lengthens the recession phase. With no other influences, the superposition of business cycles on a long-term fluctuation would produce the milder recessions since World War II, without relying on post-war monetary policy as an explanation.

Much concern has been expressed about the failure of monetary policy to cope with faltering economic activity during the current recession. The assumption that monetary policy accounted for milder recessions in the preceding two decades underlies disappointment in the lack of present effectiveness. But, the explanation may be simply that monetary policy has at all times had little leverage over employment and the level of economic activity. If indeed, the economy is now at the top of a Kondratieff cycle, the more severe present recession is adequately explained by weakening of the long-wave upthrust that had given preceding business cycles their apparent buoyancy.

The Great Depression of the 1930's is sometimes attributed to an unfortunate choice of monetary policy by the Federal Reserve. Such an explanation assumes monetary policy to be crucial to economic change. But, if a long wave exists and arises primarily from internal structural dynamics of the economy that lead to over-production of physical capital, then monetary policy may have only a weak influence on either the cause or cure of major depressions. To the extent that monetary policy has any influence on the long wave in the economy, the principal effect may be to encourage upward overshoot at peaks with a corresponding steeper decline,

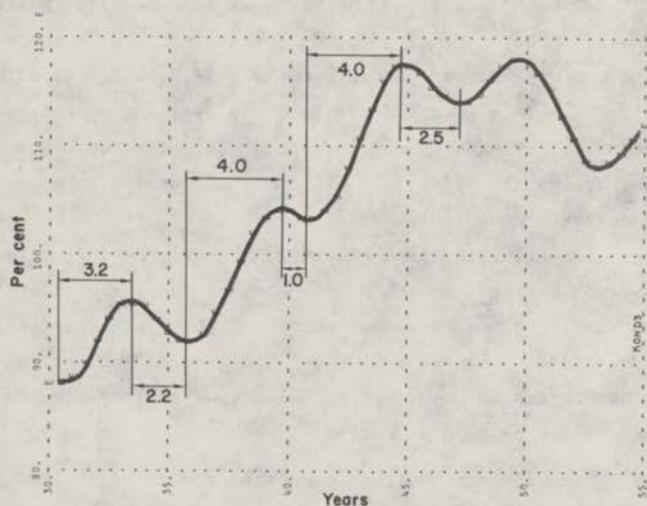


Figure 7. Addition of sinusoids during rising part of the long wave.

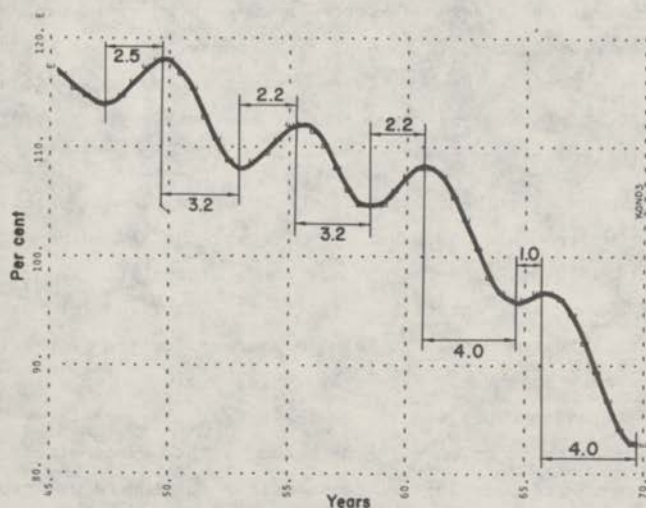


Figure 8. Addition of sinusoids during falling part of the long wave.

as a consequence of expansionary monetary policy during the late stages of the long-wave economic boom.

The existence of several different simultaneous cyclic modes in the economy would make it unnecessary to invoke monetary policy to explain the Great Depression, the milder recessions in the 1950's and 1960's, or the worse recession now. Instead, the three cyclic modes are all seen as arising primarily from the physical structure and managerial policies in the productive sectors of the economy. Although it is reasonable to presume that at some times in some modes of economic behavior there could be some influence from monetary policy, the connection may be tenuous and the leverage slight. When the National Model has been extended to include the banking system and the Federal Reserve, the financial structures can be examined to see how much they add to or change the behavior modes generated in the production sectors.

2. Inflation vs. Unemployment

Many political pressures and governmental actions seem to rest on an assumption that inflation and unemployment are the inverse of one another. For example, a prevalent belief exists that by increasing money supply, with consequent inflation, unemployment can be reduced.

The presumed leverage of government in deciding the mix of inflation and unemployment in the economy may well rest on a number of fallacies and misconceptions. First, as discussed in the preceding section, milder recessions since 1945 have been attributed to fine tuning in monetary policy, whereas the less severe recessions may be simply a consequence of superposition of short and long cycles. Second, capital investment has been considered a necessary link in the dynamics of the business cycle, whereas the business cycle appears possible without variations in capital stock or changes in investment in fixed capital. Third, interest rates and credit are believed to be major influences on investment decisions,

whereas stronger influences probably come from fluctuating inventories, backlogs, profitability, expectations, and procurement delays. Fourth, and perhaps most seriously, the Phillips curve has been interpreted as a general relationship between all sources of inflation and all causes of unemployment. However, our work to date suggests that the balance of inflation and unemployment in the economy depends in a complex way on the many modes of behavior in the economy as well as on the governmental policies being followed. For example, a simple Phillips curve relationship probably applies to wage changes, cost variations, and employment fluctuations that go on within the dynamics of the short-term business cycle. However, changes in money supply or changes in the position of the economy relative to the long-wave fluctuation will tend to cause shifts in inflation and unemployment that cannot be described in terms of simple movements along a fixed tradeoff curve. This implies, as discussed below, that the Phillips curve concept is not a reliable indicator for public policy.

The Phillips curve is a downward sloping relationship that is often interpreted as relating inflation to unemployment. Allegedly, by accepting more inflation, unemployment can be decreased. But recent experience has been disappointing. High inflation and high unemployment have coexisted. Why?

(Text continued on page 27)

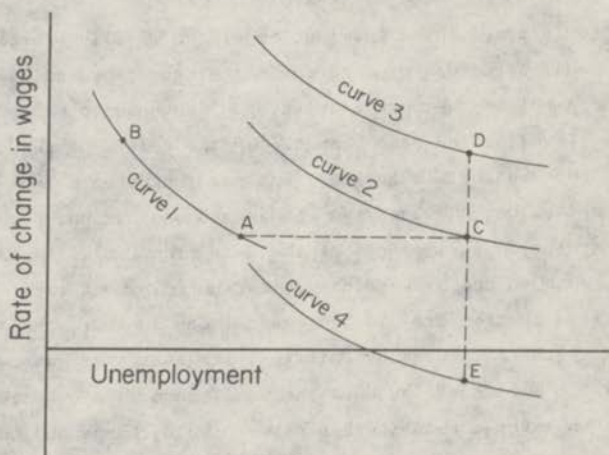


Figure 9. Phillips curves as moved by long-term unemployment and monetary policy.

The Phillips curve, as implied by Curve 1 in Figure 9, was originally measured as a relationship between rate of change in wages and unemployment. Data are drawn from many business cycles. Wage change and unemployment tended to move inversely to one another over the duration of the business cycle as along Curve 1 between points A and B. The Phillips curve comes out of that dynamic mode (the business cycle) that seems to relate inventory to employment fluctuations. It is the mode illustrated in Figure 2.

For a preliminary examination of the Phillips-curve relationship, the model structure of Figure 1 was extended by adding a section of the labor-mobility network consisting of an unemployment pool, hiring, quits, layoffs, and wage change. In the spirit of the computer simulation tests described earlier, one can then record from the model two time series, one showing wage change and another unemployment rate. These are synthetic equivalents of the data from real life as used by Phillips. When values of wage change and unemployment rate from successive points in time are plotted against one another, the scatter diagram, like the data used by Phillips, suggests a downward-sloping relationship. The model, as does the real economy, shows over the business cycle an inverse relationship between wage change and unemployment.*

But a dynamic inverse relationship over the short-term business cycle, arising within the inventory-employment process, is very different from a generalized tradeoff between all causes of inflation and all causes of unemployment. The observed business-cycle-related dynamic behavior of wages and employment at the operating level can exist while saying little about relevant policy for varying the money supply.

*The work referred to here is being done by Dale Runge in the System Dynamics Group at the M.I.T. Sloan School of Management. A manuscript is in process.

Potentially, three different and largely uncoupled dynamic modes may be causing shifts in unemployment and inflation. First, the business cycle appears to produce a cyclic variation in both wage change (with accompanying changes in prices) and unemployment that yields the Phillips curve relationship as shown by Curve 1 of Figure 9. Second, the Kondratieff cycle may produce long-term shifts in unemployment capable of moving the short-term Phillips curve horizontally as from Point A to Point C on Curve 2. Third, if money supply were increased in the hope of reducing unemployment, unemployment would not move back along Curve 2 if, in fact, the money supply lies mostly outside the business-cycle structure producing the Phillips curve. Instead, continued increase in money supply faster than increase in real output would produce long-term inflation by moving the Phillips curve vertically as to Point D on Curve 3. The business cycle, deep within the economy at the inventory-employment-production level, could still cause movement along either Curve 2 or Curve 3, depending on which curve had been established by the long-term average rate of increase in money supply.

Figure 9 suggests three different dynamic processes. First is a movement along any one of the curves as wages (and prices) change inversely with unemployment during the short-term business cycle. Second are changes in long-term unemployment that have the effect of moving the business-cycle curve horizontally as from Curve 1 to Curve 2. Such long-term changes in unemployment could come from the Kondratieff cycle and from the effects of unemployment compensation and other transfer payments in making unemployment less onerous and encouraging more time for job search. Third is inflation caused by long-term rate of change in the money supply, having the effect of moving the business-cycle curve vertically as from Curve 2 up to Curve 3 or down to Curve 4.

The relationships in Figure 9 suggest reversible price and employment changes from the business cycle, long-term unemployment from causes apart from either the business cycle or monetary policy, and monetary

policy that is primarily responsible for the long-term rate of inflation. If the three aspects of behavior are so separated, then the present increase in unemployment lies outside the reach of monetary policy. Monetary policy, however, can be used to control inflation. Such a hypothesis implies that the present level of unemployment can be accompanied by either high or low inflation, depending on how money supply is managed.

Failing to distinguish different modes of dynamic behavior can inadvertently lead to actions that make matters worse. Such confusion may now exist in the country's efforts to manage inflation and unemployment. Much additional light should be shed on the issues as continued research makes possible a deeper examination of the several sources of unemployment, various causes of price change, and the channels whereby monetary policy is connected to the principal dynamic modes of the economy.

F. IMPLICATIONS

The preceding discussion is based on work still in progress. Nonetheless, preliminary observations are perhaps worth summarizing for discussion and debate:

- a. Several simultaneous periodicities of economic fluctuation can exist in the economy at the same time.
- b. Basic industrial structures and management policies can generate not only the business cycle but also the Kuznets cycle of some 18 years duration and the Kondratieff cycle of some 50 years duration.
- c. The 3-to-7 year business cycle seems to be caused primarily by interactions between inventories and employment.
- d. Capital investment probably has less to do with contributing to the business cycle than it has in generating the longer Kuznets and Kondratieff cycles.

- e. Monetary policy, to the extent that it works through investment in plant and machinery, may have little influence on the business cycle.
- f. Mild recessions since World War II can be explained by the rising phase of the Kondratieff long wave rather than as a consequence of post-war monetary policy and "fine tuning."
- g. The greater severity of the present recession may indicate the top of a Kondratieff long wave of capital expansion.
- h. Confusion between the business, Kuznets, and Kondratieff cycles may cause symptoms to be misunderstood and counter-productive national policies to be adopted.
- i. The Phillips curve relationship between the rate of wage change and unemployment seems to belong to the internal dynamics of the business cycle. As such it probably lies beyond the effective reach of monetary policy.
- j. Because the Phillips curve and monetary policy belong to different economic substructures and probably to different dynamic modes, the Phillips curve is a weak guide to either monetary policy or actions to cope with long-term unemployment.
- k. Recent increases in unemployment may not come from the business cycle but from the long-term Kondratieff cycle at the end of the phase of over-investment in capital equipment.
- l. The belief in a tradeoff between inflation and unemployment may be erroneous with the result that increased money supply fails to relieve unemployment but does produce inflation.

The preceding observations, if correct, have major implications for government and business decisions. Even a small probability of their validity justifies priority for further analysis. The System Dynamics National Model summarized here should explain the existence and simultaneous interaction of the major modes of aggregate economic activity.

As we continue the model assembly, a deeper and more comprehensive understanding should emerge for how the economy behaves in the short, intermediate, and long run. We believe there can emerge a new tool to aid

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in developing more successful corporate strategies and more effective governmental policies for responding to present social and economic stresses.

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APPENDIX A

A DYNAMIC MODEL OF NATIONAL SOCIAL AND ECONOMIC CHANGE

The System Dynamics Group of the Sloan School at M.I.T. is well advanced on a national model of social and economic behavior. It is a system dynamics type of model and so is very different from the more common econometric models. The present controversies about the economy, uncertainties about the causes of inflation, and debates about economic theory all suggest the need for an alternative approach to economic dynamics. A comprehensive system dynamics model incorporating the structures that generate economic fluctuations, growth, and environmental restraints should complement other approaches and fill in where other methods of analysis have been unable to answer important questions.

The system dynamics model now nearing completion should yield substantial new understanding of major social and economic pressures. Within the next year or two the model will permit examining the forces underlying inflation and unemployment, the impact on standard of living as a country buys more energy and resources from abroad, the consequences of various methods of recycling money paid for oil imports, the effect on exchange rates from foreign manufacturing by multinational corporations, and the economic forces arising to reverse the historical flow of people from agriculture and manufacturing toward government services.

The structure of the socio-economic model is intended to be general and to apply to any country having agriculture, consumption, manufacturing, and money. The structure should be rich enough in detail to represent not only industrial economies but also the underdeveloped and developing countries. Fitting the model to a particular country would require only selection of suitable parameters and initial conditions.

1. Overview

The model will treat all major aspects of the socio-economic system as internal variables to be generated by the interplay of mutual influences within the model structure. The model will contain production sectors, labor and professional mobility between sectors, a demographic sector with births and deaths and with subdivision into age categories, commercial banking to make short-term loans, a monetary authority with its controls over money and credit, government services, government fiscal operations, consumption sectors, and a foreign sector for trade and international monetary flows.

A generalized production sector is being created with a structure comprehensive enough that it can be used, with selection of suitable parameters, for each of some fourteen or more producing sectors in the economy. Each sector will reach down in detail to some ten factors of production, ordering and inventories for each factor of production, marginal productivities for each factor, balance sheet and profit and loss statement, output inventories, delivery delay quotation, production planning, price setting, expectations, and borrowing.

The model is being formulated for the new DYNAMO III compiler, which handles arrays of equations and makes especially easy the replication of the production sector and its subparts. For example, an equation in the ordering function need be written only once with array subscripts to identify the ordering functions for each factor in each sector.

By reaching from national monetary and fiscal policy down to ordering and accounting details within an individual production sector, the model will bridge between the concepts of macro-structure and micro-structure in the economic system. We believe that the major modes of the economy arise from such a depth of structure and that highly realistic and informative behavior should emerge from such a degree of disaggregation.

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2. Standard Production Sector

A standard production sector will be replicated to form a major part of the model. By choosing suitable parameter values, the standard sector can be repeated for consumer durable goods, consumer soft goods, capital equipment, building construction, agriculture, resources, energy, services, transportation, secondary manufacturing, knowledge generation, self-provided family services, military operations, and government service. Such generality focuses attention on the fundamental nature of production of goods and services and simplifies both construction and explanation of the model.

Within each production sector are inventories of some ten factors of production--capital, labor, professionals, knowledge, technological change, buildings, land, transportation, and two kinds of materials. In addition, production is affected by length of work week for labor and length of work week for capital.

For each factor of production, an ordering function will create an order backlog for the factor in response to desired production rate, desired factor intensity, marginal productivity of the factor, price of the product, price of the factor, growth expectations, product inventory and backlog, profitability, interest rate, financial pressures, and delivery delay of the factor. In terms of dynamic behavior, the ordering function will be far more influential than the production function; yet, in the economics literature, attention has been in the reverse priority.

The structure of a standard production sector is essentially the structure of a single firm in the economy with parameters and non-linear relationships chosen to reflect the broader distributions of responses resulting from aggregating together many firms within a sector. As with a firm, the sector will have an accounting section that pays for each factor of production, generates accounts receivable and payable, maintains balance sheet variables, computes profitability, saves, and

borrow money. The structure should generate the full range of behavior that arises from interactions between the real variables and the money and information variables. By carrying the model to such detail, it should communicate directly with the real system where a wealth of information is available for establishing the needed parameter values.

A production sector will generate product price in accordance with conditions within the sector and between the sector and its customers. For testing price and wage controls, coefficients are available to inhibit price changes. The sector will distribute output among its customer sectors. Market clearing, or the balance between supply and demand, will be struck not by price alone but also on the basis of delivery delay reflecting availability, rationing, and allocation.

3. Labor and Professional Mobility

People in the production sectors are divided into two categories --labor and professional. For each category a mobility network defines the channels of movement between sectors in response to differentials in wages, availability, and need. A mobility network has a star shape with each point ending at a production sector and terminated in the level representing the number of people working in the sector. At the center of the star is a general unemployment pool, which is the central communication node between sectors. Between the central pool and each sector is a "captive" unemployment level of those people who are unemployed but who still consider themselves a part of the sector. They are the people searching for better work within their sector or who are on temporary layoff but expecting to be rehired. In a rising demand for more labor, those in the captive level can be rehired quickly, but longer time constants are associated with drawing people from other sectors by way of the general unemployment pool.

4. Demographic Sector

The demographic sector generates population in the model by controlling the flows of births, deaths, immigration, and aging. Age categories divide people into their different roles in the economy from childhood through retirement. The demographic sector divides people between the labor and professional streams in response to wages, salaries, demands of the productive sectors, capacity of the educational system, and family background. Workforce participation determines the fraction of the population working in response to historical tradition, demand for labor, and standard of living.

5. Household Sectors

The household sectors are replicated by economic category--labor, professional, unemployed, retired, and welfare. Each household sector receives income, saves, borrows, purchases a variety of goods and services, and holds assets. Consumption demands respond to price, availability of inputs, and the marginal utilities of various goods and services for different levels of income.

6. Financial Sector

The financial sector is divided into four parts--commercial banking, savings institutions, mortgage lending, and the monetary authority. The financial sector determines interest rates on savings and bonds, buys and sells bonds, makes long-term and short-term loans, and creates intangible variables like confidence in the banking system.

The commercial banking system receives deposits, buys and sells bonds, extends loans to households and businesses, and generates short-term interest rates. In doing so it manages reserves in response to discount rate, expected return on investment portfolio, demand for loans,

and liquidity needs.

The savings institution and mortgage lending institution receive savings, extend long-term loans to households and businesses, generate long-term interest rates, buy and sell bonds, and borrow short-term from the banking system. They balance money, bonds, deposits, and loans. They allocate loans between businesses and households, and monitor the debt levels and borrowing capability of each business and household sector.

The monetary authority controls discount rate, open market bond transactions, and required reserve ratios. In doing so it responds to such variables as owned and borrowed reserves of the bank, demand deposits, inflation rate, unemployment, and interest rates.

APPENDIX B

Chapter 17 from
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 Jay W. Forrester,
 Wright-Allen Press, Inc.
 Cambridge, Mass., 1975

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Control of Urban Growth

The theme at this meeting of the American Public Works Association is "A Balanced Approach to Community Development." What does it mean? Ten years ago, "community development" would certainly have meant community growth. But today, community development might imply emphasis on the economic health of the community, or concern for a broad array of issues we call the quality of life. The phrase "community development" is one of those ambiguous terms that means what the listener wants it to mean; it reflects our uncertainty about the future of urban living. The theme speaks of "A Balanced Approach," but the program of the meeting is essentially technological. That too reflects our national attitude and our dependence on technology for the solution of any problem that arises. The program shows sessions on equipment, drainage, solid waste, transportation, water supply, buildings and grounds, roads and streets, and administration. But nothing in the program suggests the close coupling that I believe exists between the strictly public works function and the worsening social stresses that are beginning to face our cities.

TECHNOLOGY AND PUBLIC WORKS

Public works administrators are concerned primarily with the technology of urban living. For more than a hundred years the improvement of technology has been the route to improvement in urban living. Public confidence in technology is deeply ingrained. When there is a problem, the country begins by seeking a technical solution. The reasons are twofold. First, technical approaches in the past seem to have succeeded. Second, technical programs are usually easier to visualize, organize, and execute than are changes and improvements in the psychological, social, economic, and ethical aspects of our existence.

This paper is a revised version of the keynote address before the American Public Works Association, Minneapolis, Minnesota, September 25, 1972. It has been published in Nathaniel J. Mass, *Readings in Urban Dynamics: Volume I* (Cambridge, Mass.: Wright-Allen Press, 1974), pp. 295-273.

But the faith in technology is being clouded by doubt. Technology has been improving while at the same time many aspects of our social conditions have been worsening. Some people are beginning to wonder if there may not be a connection between the two. Is it possible that the time is past when better technology automatically means better living?

The evidence of faltering confidence in technology is everywhere. People are objecting to more highways because of their harmful impact on families, businesses, and communities, without seeing a lasting benefit as growing population and the increasing distances that must be traveled result, in spite of the additional highways, in as much or more total time being spent in travel. Sewer extensions are being questioned because they imply more houses marching across the remaining open areas. Technology has provided higher buildings that result in more concentrated population and increased social disorders. Urban transit systems are being questioned because they may go hand in hand with economic segregation of the population and the decline of the central city. Taxes are rising, but the technology purchased by taxes seems to be losing the battle.

FUNDAMENTAL SOCIAL CHANGE

Is it possible that our social system has changed since the days when improved technology did lead to improved living? Can a social system undergo changes in its apparent character so that yesterday's *solutions* to problems become the *causes* of tomorrow's problems? I suggest that indeed such changes in the behavior of our social system are possible, and that they are occurring.

A social system can change its behavior when the restraints under which it operates become different. In the past, the production of material goods was primarily determined by and limited by the availability of capital and labor. To say that production was determined by capital and labor implies that it was not limited by anything else. Our traditions and rules of thumb for social and economic management developed in a period when the inputs to production from nature were, for all practical purposes, unlimited. There was no significant shortage of agricultural land, water, natural resources, energy, or pollution dissipation capacity. But times have changed. In every direction human activity is now being limited by the maximum capacity of the natural environment. When the constraints shift from human effort, in the form of labor and the creation of capital, to a different set of limits, the entire character of the social system can change. Our economic system is undergoing such a transition. Under the new conditions, remedies that worked in the past are apt to be disappointing in the future.

When there are no geographical or environmental limits, economic growth can run ahead of population growth to increase the public well-being. During the growth phase, the many goals of society tend to be independent of one another and can be separately pursued. In the past, if an individual wanted more personal freedom, he could move to the unsettled frontier, while at the same time improving his standard of living by farming rich and virgin agricultural land. But

as space fills up, all the social goals begin to interact more strongly with one another. More and more the system begins to offer only trade-offs and compromises. If one wants a higher population, he must accept less personal freedom. If there is to be more industry, there will necessarily be more government regulation and more social groups to intervene in each step and action. If agriculture is to become more capital intensive, there will be more pollution and more long-term damage to the productivity of the land. As population rises against the environmental limits, there will necessarily be higher unemployment and more welfare, with rising governmental costs that divert resources away from additional capital investment.

The change to a new kind of behavior in our socioeconomic system is a consequence of population and economic growth. In the past, when land and natural endowments were unlimited compared to our needs, few restraining pressures were reflected back from nature as a result of exponential growth. But as the natural limits are approached, countervailing forces develop ever more strongly. More and more effort is used in merely overcoming the limitations of the environment rather than, as earlier, in producing effective human benefit. For a while, by expending enough physical effort and capital, the barriers set up by nature can be pushed back somewhat. However, if we follow the route of fighting nature's limits we will exhaust ourselves. The limits can be pushed some, at ever-increasing cost, but they cannot be eliminated.

SOCIAL STRESS FROM GROWTH

The detrimental consequences of continued growth are appearing not only as environmental damage. In fact, environmental damage from growth is probably one of the lesser threats to society. The greater threats may be psychological as frustration rises, as the individual perceives himself as powerless to affect his future, and as discord increases. Growth is bringing pressure on every facet of existence.

Imbedded in our folklore is a belief that larger size leads to greater economic efficiency. Up to a point, that probably has been true. But now in cities, even medium-sized ones, the economies of scale no longer favor additional growth. The cost per capita for the operation of a city rises steeply as the total population and the population density increase. At some point, and the largest cities have arrived at that point, the rising costs pull down the vitality of the entire socioeconomic process, making further growth all but impossible.

When growth generates costs faster than benefits, we find ourselves in the position where "the faster we run, the behinder we get." Many people are beginning to recognize the futility of solving growth-created problems by further growth but, strangely enough, there is as yet little attention to the possibility of "catching up by stopping." If we could slow the growth of population and population density in a city while adopting policies to generate continuous renewal and revitalization, it would be much easier to increase the standard of

living and the quality of life. But under the existing circumstances, improving the services of a city after a while leads not to improvement in the quality of life but, instead, to larger size with the additional services being swallowed up by more people who demand more of the municipal administration.

The underlying cause of today's social pressures is growth [3,4]. The changing attitude toward economic growth shows how completely our world is changing. Until ten years ago, everyone promoted growth. Boosterism was the central theme. States had development commissions to promote industry and to attract population. Towns and cities had chambers of commerce to promote growth. But times have changed.

In the present transition period, the prevalent attitude is to accept growth with resignation as a burden to be borne. But that resignation is giving way to opposition. More and more there is active resistance to growth. Oregon, Vermont, Colorado, California, Florida, and Delaware have, in various ways, taken steps to limit the expansion of population and industry.

LEADERSHIP FOR MAJOR REDIRECTION

Not only is the national attitude faltering toward growth as the solution to social problems, but the country is also unclear on where to expect leadership in setting new social directions. Is the leadership for facing fundamental changes in society to come from the federal government or from local leadership? Can the federal government set new directions, or is it limited to attempting minor improvements on the old patterns?

The ambiguity in federal government leadership is illustrated by the "Report on National Growth 1972" from the president to Congress. The report acknowledges the multiplicity of problems associated with population and economic growth. But it nowhere faces squarely the need for slowing down those growth processes that are creating ever more difficult problems. In noting the difficulties associated with growth, the report uses such phrases as

responding to the challenges of growth ... coping more effectively with growth ... to deal with the problems of growth ... Increasing population in metropolitan areas has intensified problems of air, water, and noise pollution and other forms of environmental degradation. Forests, streams, swamps, shorelines, wetlands, open space, and scenic areas have been consumed by metropolitan development ... The problems associated with growth, by any definition, include many of the most intractable social and governmental concerns of this country.

But federal policy cannot take a stand for which a public constituency has not yet been established. So the report is politically unable to depart from the past national tradition of depending on growth for the solution of all problems. Rather than clearly facing growth as the cause, and raising the issue of slowing growth as the long-term solution, the report pays homage to the national idol of growth in such phrases as

formulating a growth policy ... Population growth recovered rapidly in the 1940's ... Urbanization also benefited the Middle Atlantic States; after 1900, they were able to reverse their steadily diminishing share of the total population ... This growth, in the form of population changes, technological development, economic expansion, and individual initiative, will almost certainly continue during the foreseeable future ... The Federal government can do much to set the tone and provide leadership and new directions for the Nation in preparing for growth ... This is especially true in the economic area. Fiscal and monetary policy, prudently conducted, can do much to keep the Nation's economy growing at its full potential. Similarly, Federal support for research and development can help accelerate the pace of technological advancement, which is so necessary to a growing economy.

So the federal policy at the moment is, in effect, to attempt to relieve the pressures that result from growth while at the same time attempting to accelerate that growth. This is not said as a criticism of the national administration.

Until new trends in thought are well established and widely recognized, there is no constituency to support a national government in a major reversal of past social beliefs. Our national political system does not permit a federal administration to exercise effective leadership in new directions that break sharply with past traditions. Leadership in small things can come from the federal government. Leadership in big things must start with individuals and local governments.

The United States is now in one of those major periods of reorientation that occasionally face a society. Probably not since the founding of the country and the writing of the national Constitution has so much been at stake and so much unfettered and innovative thinking been necessary. The clichés, the folklore, and the Horatio Alger stories of the past must be shaken off as we face the fact that continuing growth, far from solving problems, is the primary generator of our growing social distress. But there is reason for hope and confidence.

The issues are being faced squarely by many individuals, groups, and even to some extent by cities and states. Many are beginning to see that the rising social and natural pressures will make it impossible to maintain the present quality of life if population and industrialization continue to grow. Instead of running ahead of the growth wave, it is becoming clear to many that ways must be found of facing the issue and learning how to restrain the expansionary forces that are coming to dominate society. The implications are staggering. The ramifications will extend into corporate and governmental organization, into the legal structure, and into values, goals, and ethical beliefs [1].

THE ATTRACTIVENESS PRINCIPLE

Why can public services not get ahead of demands? Why do the best of intentions for improving a city lead, instead, to greater social pressures, more commuting delays, increased drug addiction, higher crime rates, and greater welfare loads? The answer lies in what we have come to call the "attractiveness principle" [2].

The attractiveness principle states that, to any particular population class, all geographical areas tend to become equally attractive. Or perhaps more realistically stated, all areas tend to become equally unattractive. Why do all areas tend toward equal attractiveness? It is because people move from unattractive areas to areas of greater attractiveness. I use "attractiveness" to encompass every aspect of a city that contributes to its desirability or undesirability. Population movement is an equalizing process. As people move toward a more attractive area, they drive up prices and overload the job opportunities, the environmental capacity, the available housing, and the governmental services. In other words, rising population drives down all the characteristics of an area that made it initially attractive.

To illustrate the attractiveness principle, imagine for a moment the ideal city. Perhaps the ideal city would be one with readily available housing at low cost, a surplus of jobs at high wages, excellent schools, no smoke or pollution, housing located near one's place of work, no crime, beautiful parks, cultural opportunities, and to this list the reader can add his own preferences. Suppose such a city existed. What would happen? It would be perceived as the ideal place to live. People from everywhere would move into the ideal city until the advantages had been so swamped by rising population that the city would offer no net attractiveness compared with other locations.

QUANTITY VERSUS QUALITY

There is a necessary and fundamental compromise that must be accepted between growth and quality. To hope otherwise is to delude oneself. A White House report carried the title "Toward Balanced Growth, Quantity with Quality." The phrase "Quantity with Quality" is inherently a contradiction. It is a political transitional phrase that lies between the old concept of "growth is good" and the future realities in which growth is seen as the fundamental cause of rising social problems.

The fundamental conflict between quality and quantity arises after quantity has grown beyond a certain point. It appears that the United States is now beyond that point. Further growth in population and industrialization means declining quality. How is the compromise between quality and quantity to be struck? Is it to be done uniformly for everyone, or is there to be a local choice between quality and quantity? Returning to the theme of this meeting, "balanced development" means the choice between quality and quantity.

A society has many goals. These impinge on one another more and more heavily as an economic system approaches the end of growth, enters the transition period, and eventually moves into some form of equilibrium. The multiple goals have the characteristic that no one of them can be maximized without unacceptable losses in one or more other goals. Some of the goals are material, others are social and psychological, but they all impinge on one another. We want freedom, but not at the expense of extreme economic hardship. We

want to build more housing, but cannot forever at the expense of agricultural land. We want more capital investment to increase productivity and control pollution, but not to the detriment of governmental services.

Many people seem to assume that control of growth will circumscribe our freedoms but that continued growth will not. Nothing could be further from the truth. The fallacy is illustrated by a paragraph again taken from the President's "Report on National Growth 1972," where we find,

In many nations, the central government has undertaken forceful, comprehensive policies to control the process of growth. Similar policies have not been adopted in the United States for several reasons. Among the most important of these is the distinctive form of government which we value so highly in this country. Ours is a *federal* system, with powers shared between the States and National Government. This system preserves the ability of citizens to have a major voice in determining policies that most directly affect them. This voice is sustained by keeping government close to the people.

But it is becoming more and more apparent that growth in population, industrialization, pollution, unemployment, welfare costs, inflation, and imbalanced trade is undermining local and state freedom. The symptoms resulting from growth are being attacked mostly from the national level, with the result that national policies and the terms of national funding impose nationally determined values on all areas. Federal laws to cope with the results of uncontrolled growth restrict local choice. The higher the social stresses from growth become, the more governmental machinery will be assembled to fight the symptoms. On the other hand, growth can be controlled in many ways, some of which would also destroy freedom, but other ways can be devised to preserve freedom. However, the alternative of continued growth runs only in one direction—toward less individual and local freedom.

COMPROMISES BETWEEN GOALS

A whole set of pressures is now beginning to inhibit growth. The country faces an oil shortage. Pollution is no longer merely an industrial problem; to reduce pollution created by the individual, his automobile now has less performance, needs more maintenance, and has a higher gasoline consumption. As a result, automotive emissions have been somewhat reduced, but the national oil shortage has worsened and our dependence on other countries has increased. Pollution has also become a major issue in agriculture, as fertilizers and the wastes from animal feed lots pollute rivers and lakes. At the social level, rising crime, drug addiction, mental stress, and community breakdown are all exerting pressure against further growth. Many pressures are developing to stop growth; some we can influence, others we cannot. A most important question is how we would like to have the growth-suppressing pressures distributed.

Pressures to slow the growth process will continue to rise. They will tend to develop from every direction. Some of the pressures can be alleviated. But do we

want to alleviate, where we can, the pressures arising from growth? Or, do those pressures serve a valuable purpose?

Unless ever-rising exponential growth can go on forever, and that is generally accepted as impossible, then some set of pressures will eventually stop growth. From whence should the growth-suppressing pressures come? Should the pressures be distributed throughout our society, or should they be concentrated in only a few places within our socioeconomic system? This choice between concentration or distribution of pressures is of the greatest importance. The question arises because we have the power to alleviate pressures in some sectors of the society but not in others. If we alleviate pressures where we can do so, growth will continue until it produces a further rise in the pressures that we cannot control. The way we react to present pressures determines the nature of future pressures.

One set of pressures, such as water shortages and crowded streets, can be alleviated by technological means. We are very good at handling technology, and we can eliminate those pressures if we wish. A second set of pressures, such as job availability, can be alleviated by economic means, and those we know less about but can still influence. A third set of pressures is of a social nature—crime, civil disorder, declining mental health, war, drug addiction, and the collapse of goals and values. These are the ultimate pressures with which we know not how to cope.

If we alleviate the pressures that can now be overcome, those pressures no longer contribute to slowing the growth process. Growth then continues until higher pressures are generated in other sectors. This process has been going on. The first pressures to arise were dealt with technologically by increasing building heights, improving transportation, bringing water from greater distances, developing new sources of energy, and improving medical treatment. As a result of such technological successes, growth continued until a variety of economic malfunctions began to appear—rising unemployment and welfare, worsening balance of trade, and inflation. To a small extent, the economic pressures have been alleviated and their consequences delayed. Growth has thereby continued until the social deterioration resulting from crowding and complexity has begun to manifest itself in serious ways.

In this sequence of technology—solving one problem only to produce an insolvable problem later—is buried the reasons for the antitechnology attitude that has begun to develop. In the past, technology appeared to be solving our problems. The technologists became self-confident. The public came to depend on them. The attitude took root that all problems could be solved by an ever-improving technology. Instead, the rising technology, with its consequent growth in population and industrialization, has carried the society to a complexity and a congestion that are producing rising symptoms of distress in the economic and social sectors. The very fact that technology succeeds in meeting its narrow goals produces greater difficulties in other parts of our social system. The antitechnology feeling grows because of the repeated cycle in which pressures develop,

technology produces an excellent solution within its narrow self-perceived goals, the social system becomes more compressed and frustrating and the public perceives that the overall quality of life has failed to respond to the technical solution. The failure to satisfy society results because meeting the subgoals of the technologist is less and less likely to enhance the composite value of all the social goals. For each technical goal that is improved, some social or economic goal is forced to decline.

Growth has continued past the point where suboptimizing is satisfactory. Suboptimizing means the meeting of a local goal without attention to consequences in other parts of the system. During the past period of our industrial growth, the various facets of the technical-social-economic system were sufficiently uncoupled that suboptimizing was a satisfactory procedure for decentralization. Suboptimizing allowed different groups to pursue their own ends independently, with confidence that the total good would thereby improve. But as the system becomes more congested, the solution of one problem begins to create another. The blind pursuit of individually laudable goals can create a total system of degraded utility.

DETERMINING THE FUTURE QUALITY OF A CITY

What does this discussion of technology and social goals mean for the American Public Works Association? It means that in the past those who dealt with the technological aspects of urban life were free to suboptimize. The public well-being was increased by the best possible job of drainage, waste disposal, transportation, water supply, and the construction of streets. But it is no longer true that improving each of these will always improve a city. By solving each of these technical problems the technologist risks becoming a party to increasing the population of a city and the densities of the population. He may start social processes that eventually reduce the quality of life. The public is recognizing that improved technology does not always bring an improved society. As a result, men who have sincerely dedicated their efforts to the public good, but perhaps have not foreseen the diversity of social consequences, have already begun to feel the backlash of public criticism.

So far I have developed several propositions. First, pressures are rising that will inevitably stop growth. Second, the national commitment to growth is too strong for the federal government to lead the country in a new direction until a broad constituency for changed expectations has been formed. Third, if the stress-creating nature of growth is to be recognized, and if experiments are to be carried out to find a satisfactory way of moving from growth to a society that can accept a future equilibrium, leadership must come from the local and state levels. Fourth, technical accomplishments no longer appear to be capable of solving our mounting social problems; instead, technology, as now being used, may often lead to expansion in urban population and living densities that become the cause of rising social difficulties. Fifth, all cities do at all times tend toward equal

attractiveness in which no one city can remain significantly more attractive to immigration than other cities. Given this set of propositions, what freedom of action is left to a city?

A city can choose, to a substantial extent, the mix of pressures under which it wishes to exist. There are many components of urban attractiveness, and if one of these is decreased, others can be improved. One cannot create the ideal city. But one can create certain ideal features if he is willing to compensate for them by intentionally allowing other features to worsen. In the past we have improved the technological aspects of cities and have thereby unintentionally contributed to the rise of many of the economic and social problems that plague cities today. There are many facets to a city. There are many things that the public and an urban administration can do. One thing they cannot do is produce the perfect city. They can, however, exercise a wide choice among imperfect cities.

I suggest that a valid goal for local urban leadership is to focus on improving the quality of life for the residents already in the city, at the same time protecting against the kind of growth that would overwhelm the gains. In short, one might raise the attractiveness of a city for the present residents while, at the same time, decreasing the attractiveness to those who might inundate the system from the outside.

Such statements, I recognize, lead to ethical and legal controversy. I am saying that a city should look after itself first. Its own welfare should come ahead of concern for others who are taking no steps to solve the fundamental problems for themselves. If enough cities establish successful policies for themselves, there will be two results. First, a precedent will have been set for coping with the fundamental underlying source of difficulties. Second, the larger the number of areas that solve their problems for themselves, the sooner and more forcefully will the remaining uncontrolled growth impinge on other parts of the country and the more quickly will the nation realistically face the long-range issues of stress arising from excessive growth.

So what can a city do? It can influence its future by choosing among the components of attractiveness. The attractiveness components of a city fall into two categories according to whether they operate more forcefully on the quality of life in the city or on inward migration and growth. These two categories are the "diffuse" and the "compartmentalized" characteristics of a city. The objective should be to maximize the diffuse characteristics of the city in order to improve the quality of urban life while controlling the compartmentalized characteristics in order to prevent the expanded population that would defeat the improvement for present residents.

The diffuse characteristics, such as public safety and clean air, are shared equally by all; their effect is not limited to particular individuals; and they apply alike to present residents and those who might move in. The compartmentalized characteristics of a city, like jobs and housing, are identified with particular individuals; they can be possessed by present residents but are not necessarily available to others from the outside.

Every diffuse characteristic of a city that makes it more attractive for the present residents will also make it more attractive for those who might move in, who would increase the population and density. Therefore, every improvement in the diffuse categories of attractiveness must be accompanied by some worsening in the compartmentalized categories of attractiveness to prevent self-defeating growth. The attractiveness characteristics of a city should be categorized in terms of whether they affect all residents or primarily potential newcomers. For example, the vitality of industry, a balanced socioeconomic mix of population, the quality of schools, the freedom from pollution, low crime rates, public parks, and cultural facilities are all desirable to present residents. If there is no counterbalance to restrain an expanding population, such attractive features tend to be self-defeating by causing inward migration. But the compartmentalized characteristics of a city primarily affect growth without necessarily reducing the quality of life for present residents. The number of housing units and the number of jobs tend to be compartments in the sense that they have a one-to-one correspondence with individuals rather than each being shared by all. The absence of an unoccupied house or a job can be a strong deterrent to immigration, without necessarily driving down the internal quality of life.

I see no solution for urban problems until cities begin to exhibit the courage to plan in terms of a maximum population, a maximum number of housing units, a maximum permissible building height, and a maximum number of jobs. A city must also choose the type of city it wants to be. To become and remain a city that is all things to all people is impossible. There can be many uniquely different kinds of cities, each with its special mix of advantages and disadvantages. However, the policies that create one type of city may destroy another type. A choice of city type must be made, and corresponding policies must be chosen to create the combination of advantages and disadvantages that are characteristic of that type. One might have an industrial city, a commercial city, a resort city, a retirement city, or a city that attracts and traps without opportunity a disproportionate number of unemployed and welfare residents, as some cities are now doing. But there are severe limits on how many types of cities can be created simultaneously in one place. When the choices have been made, and when effort is no longer dissipated in growth, there will be an opportunity to come to grips with social and economic decay.

Why do I bring this message to the American Public Works Association? Because the members are at the center of the two most important issues I have raised. First, leaders in public works are the custodians of the technological aspects of the urban environment. Those responsible for the physical aspects of a city can continue to solve the technological subgoals of roads, water, waste, and transportation and thereby sustain the growth process and cause a continual shifting of pressures into the social realm of rising crime, increasing psychological trauma, growing welfare costs, and accelerating community breakdown. Or, they can move to reverse the growth attitudes that in the past we considered good, but are good no more, and help halt further expansion of that part of our

technological base on which the urban crisis is growing. A second reason for these issues to be important in public works comes from the unique influence of public works over what I call the compartmentalized characteristics of a city. Public works actions directly affect the number of streets that are built, the number of houses that are erected, and the number of industrial locations that are established. Such physical actions, backed up by zoning and municipal policy, determine the kind of urban growth and whether or not there is to be growth. Through the judicious use of, and indeed the appropriate limitation of, water supply, drainage, building heights, waste disposal, road building, and transportation systems, a city can influence its future.

The reader may be thinking that planning and controlling the size and composition of a city and the migration to it are undemocratic or immoral. It may even seem that I am suggesting control where there has not been control before. Neither is true. Every city has arrived at its present size, character, and composition because of the actions that have controlled the city's evolution in the past. By adding to the water system, sewers, and streets, a city has, in effect, decided to increase its size. By building a rapid transit system a city is often, in effect, deciding to change the composition of its population by encouraging new construction in outlying areas, allowing inner areas to decay, and attracting low-income and unskilled persons to the inner ring at the same time that job opportunities decline. In other words, a control of growth and migration has been exerted at all times, but it has often been guided by short-term considerations, with unexpected and undesirable long-term results. The issue is not one of control or no control. The issue is the kind of control and toward what end.

The interurban control of population movement is the internal counterpart of international control of population movement. Except for the legal, coercive, psychological, and economic deterrents to human mobility, the standard of living and the quality of life of all countries would fall to the level set by the population group that accepts the lowest standards. No group can be expected to exert the self-discipline now necessary to limit population and the environmental demands of industrialization unless there is a way to keep the future advantages of such self-discipline from being swallowed up by inward migration. If the control of international movement of population is ethical, then some intercity counterpart must also be ethical. Or, if the justification is only that of practical necessity, then the internal necessity arises in a country that is reaching its growth limit without having established a national means to implement a compromise between quantity and quality. Between nations, countries exert restrictions on population movement that are not allowed internally between urban areas. Even so, the policies of each city have a powerful effect on mobility and on the resulting character of the city. Because controls are implicit in every action taken and every urban policy adopted, a city should understand the future consequences of its present actions. A city affects its local choice between quantity and quality mostly by how it handles the diffuse versus the compartmentalized components of attractiveness.

The difference between diffuse and compartmentalized control of urban population can be illustrated by two extremes of policies that might govern the availability of water. Depending on how it is managed, the availability of water might be either a diffuse or a compartmentalized control on growth. Consider a city with a limited water supply—more and more this will be the actual situation. To illustrate diffuse control, one could distribute water freely and equally to everyone, both present and future residents. New houses could be constructed, new industries could be encouraged, growth could be continued, and the water could be divided among all. If no other growth limits were encountered, growth would continue until the low water pressure, occasional shortages, and the threat of disaster from drought had risen to the point where out-migration equaled immigration. Under this circumstance of unrestricted access to water, net growth would have been stopped, but the equally distributed nature of the water shortage would have reduced the quality of life for all residents. The water shortage would be diffuse; it would be spread to all, former residents and newcomers alike. Alternatively, the opposite water policy illustrates compartmentalized control. Building permits and new water connections could be denied so that water demand is constrained to lie well within the water supply. Water would be available to present, but not to new, residents. Under these circumstances, the quality of life for the present residents would be maintained, but growth beyond the limit of satisfactory water supply would be restricted.

I believe that such a choice between present residents and potential immigrants is inherent in a practical solution of our urban problems. Unless control through such self-interest is acceptable, and ways are available to exercise control, there is no incentive for any city or state to solve its own problems. Its efforts will be swamped from the outside. There must be freedom for local action, and the consequent differences between areas, if social experiments are to lead to better futures and if there is to be diversity in the country rather than one gray homogenized sameness. If there is to be any meaning to the president's hope of preserving "the ability of citizens to have a major voice in determining policies that most directly affect them," local areas must be able to control their destinies in different ways and toward different ends.

If people are to influence the policies most affecting them, it follows that policies will be different in different places, and the resulting trade-offs between growth and the quality of life will be different. If there is to be any substance to local choice, there must be differences between localities.

In the policies for a city that I am proposing, the ethical and legal issues are substantial. A city, in looking after its own well-being, will no doubt be accused of being selfish because it discriminates against nonresidents. But what are the alternatives? Must it discriminate against its own present residents instead? Must it discriminate against its own long-term interests? Must it be forced to take only a short-range view of its future? Must it be a party to delaying the day when the nation faces the fundamental choice between quality and quantity? Our past

policies have not been so successful that they should persuade us against new experiments.

If a sufficient number of cities find new ways of controlling their own destinies in spite of national policy and what other cities do, then pressures to work toward the long-term well-being of the country will be quickly generated. If some cities and states take effective steps to establish an equilibrium with their natural surroundings, and to maintain a viable and proper internal balance of population and industry, then the remaining growth in the country will quickly descend on those communities and states that have taken no such action. A national consensus to establish a viable balance with the capacity of the environment will quickly develop out of the contrasts between those who have and those who have not dealt with the basic issues of overcommitment.

In summary, I believe that the country is now heading more deeply into economic and social difficulty. Technological solutions will no longer suffice. There is no national consensus strong enough to support an effective national policy nor to ensure national leadership in solving the problems that are arising from growth and overcommitment of the nation's long-term capability. But, fortunately, the problems are solvable piecemeal at the local level independently of other areas and of the national government. Local action can set a precedent for the country as a whole. Those in public works are in a uniquely influential position for exerting that leadership.

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NEW PERSPECTIVES FOR GROWTH OVER THE NEXT THIRTY YEARS

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Limits to Growth '75

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ABSTRACT

The limits-to-growth debate deals with the most important issue of our times. But the particular form of the debate often fails to couple with effective action. Discussion could be led into more practical channels by three changes in perspective--less emphasis on physical limits and more on social limits, less concentration on world limits and more on national limits, and less attention to a single dynamic mode (be it either the life cycle of growth or the business cycle) and more on how the short-term and long-term forces in the economy interact.

First, emphasis should shift from concentration on physical limits to a greater concern for social limits. The controversy over physical limits creates a public impression that growth is desirable if physical limits can be overcome. However, to the extent that physical limits are pushed back, or are merely expected to be pushed back, the emphasis on stabilizing population will be reduced. But rising population density almost certainly leads to increased social stresses. Social stress appears as mistrust between groups, personal alienation from society, disrespect for government, civil strife, and international conflict. As technology becomes more complex, social breakdown looms as the ultimate limit to growth. So far, limits to growth has been a subject for environmentalists, economists, and technologists. But, as the tradeoff between social and physical limits becomes more apparent, discussion should be broadened to include social, religious, and political viewpoints.

Second, emphasis should shift from world limits and world solutions to national limits and a national balance with the environment. The debate on limits to growth has tended to focus on the world as a whole, major regions, and on issues outside any particular person's country. Such an external perspective implies that the problem belongs to someone else. But no country can evade the social and physical

limits to growth. Furthermore, only nations have effective political processes. The external perspective sees difficulties as being imposed from the outside and war against others as the solution. The internal perspective sees world pressures as the sum of local pressures and striking an internal balance as the solution. Until the inner perspective is established, major war becomes increasingly more likely as the limit to growth.

Third, emphasis should converge from the extremes represented by the short-term business cycle and the broad sweep of the life cycle of growth to include fluctuations of intermediate duration in economic affairs. Different groups concentrate on different behavior modes in society. The public, business, and government are enmeshed in the short-term business cycle. At the other end of the time spectrum, proponents of an equilibrium society deal almost exclusively with the life cycle of growth wherein growth gives way to a transition region of conflicting pressures that lead to some future form of equilibrium. Between the business cycle and the life cycle of growth are dynamic changes running for several decades. Such intermediate modes are ignored or misinterpreted by those interested in either extreme of time span. Of particular importance is the possibility of a fluctuation in the economy of some 50 years duration known as the Kondratieff cycle.

If a Kondratieff cycle exists in the economy it should significantly affect thinking about both the business cycle and the life cycle of growth. The business cycle has usually been interpreted without regard for the possibility of its being superimposed on an intermediate fluctuation like the Kondratieff cycle. Interaction between the Kondratieff cycle and the business cycle may have led to erroneous explanations of recessions and depressions, and to inappropriate policies for economic stabilization. At the same time, the rising phase of the Kondratieff cycle may have been confused with long-term growth. A 50-year intermediate fluctuation influences the symptoms of both the business cycle and the life cycle of growth and can serve as a bridge for closing the communication gap between short-term and long-term interests.

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Those who would be leaders toward a sustainable future must thread their way through the multiple cross currents in social and economic change. Effective leadership must be built on sensitivity to the important tradeoffs, awareness of institutional influence, and knowledge of the social processes shaping the future. Toward these ends, the tradeoff lies between social and physical limits; the institutional choice favors the nation over multi-national organizations; and relevant social processes must include the intermediate changes occurring over several decades that create expectations, cause population movement, and restructure economies.

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The debate on limits to growth needs a sharpened focus. Much of the past discussion, by being so general, fails to couple with practical issues. A more effective resolution of growth questions might follow from three changes in perspective:

- a. More emphasis on social limits and on the tradeoff between physical limits and social limits,
- b. More attention to solutions at the national level where effective institutions exist rather than at the world or regional levels where institutions are weak compared to the forces created by growth and by limits,
- c. More awareness of the intermediate modes of dynamic behavior that lie between the short-term business cycle and the long-term life cycle of growth.

A. SOCIAL LIMITS

The first change of perspective is from physical to social limits. Much of the limits-to-growth debate has focused too narrowly

on physical constraints. Restricting debate to physical limits invites the hope that technology can circumvent such limits. Indeed, technology might do so for quite some time. But any expectation that shortages of energy and food can be overcome will be used by people and governments as an excuse to avoid facing the issues posed by growth of population and social stress.

Through growth in population, reduction of physical pressures can be transformed into an increase in social pressures. If physical limits seem less threatening, then concern about population growth will be temporarily relaxed. If physical support appears possible, the easy course is to ignore rising population. But rising population density is surely at the root of many social stresses. Crowding, psychological pressures, and lack of individual purpose, arising from increased population and a more complex technological society, accentuate frustration and anti-social behavior. Pushing back the physical limits has allowed population growth. But, as a consequence, rising population density will shift the pressures to social limits.

Social limits already exert growing pressure in the form of drug addiction, kidnappings, aircraft hijackings, sabotage, revolution, and a returning threat of atomic war. Technological complexity also leads to more subtle pressures in the form of questioning the legitimacy of institutions. Social limits are not relieved by more emphasis on technology. Quite the contrary, increased technology has increased per capita income while creating a more complex and vulnerable society. A complex technological society is at the same time harder to understand, more difficult to accept, and easier to disrupt. Complexity increases frustration and disenchantment, while also increasing vulnerability to either individual or organized interference.

In public debate over physical limits, the desirability of technological success is seldom questioned. For example, in the present energy shortage, the first question should not be, "Can technology provide unlimited energy?" Instead, we should ask, "If unlimited energy were available,

should we want it?" To ask for unlimited energy is to favor shifting the restraint on growth from physical limits to social limits. Energy can be converted to food for support of population that will then be more apt to grow until social breakdown occurs. We should want to choose the least traumatic mix of growth-limiting pressures. Probably we will do better with distributed rather than concentrated pressures. Rather than limit growth by social stresses alone, it seems better to have a distribution of pressures. Some social threats, some energy and materials shortages, some inadequacy of food, and some pollution would exert a balanced set of restraints until people begin to accept the inherent tradeoff between rising population and falling quality of life.

So, the debate over physical limits seems unbalanced. It can divert governments and the public from the ultimate necessity for striking a compromise between population, standard of living, and the natural environment. The issue of physical limits obscures the rising threat from social limits. As population growth continues, aided and abetted by intensifying technology, complexity increases. With greater complexity comes stronger tendencies for social breakdown and at the same time more vulnerability to disruption. The debate on growth has so far been largely between the environmentalists on one side and the economists and technologists on the other. But the issues should be broadened to include more input from sociologists, political scientists, and theologians. The non-physical side of man needs stronger representation.

B. NATIONAL FOCUS FOR ACTION

The second change in perspective is from world limits to national limits. Although the problem of growth in a finite world can be stated on a 'one-world basis, solutions seem likely to come only from the national level, because only national institutions possess the power to act.

The limits-to-growth debate has concentrated on the entire world or on major regions. The Limits to Growth book coalesced the

world into one system. Such a single aggregate is useful for stating the problem. The book, Mankind at the Turning Point, divided the world into several regions. Subdivision into major areas is useful for looking at differences between dissimilar regions. The United Nations debates food shortage and economic development as world problems. Such broad and general treatment is useful for alerting member nations to the issues. But implementation of effective policies for restraining growth and achieving a desirable equilibrium cannot be expected on a uniform world or regional scale.

For areas larger than countries, no authority exists with capability to deal with growth. Neither the United Nations nor the regional confederations have power to strike a balance in the tradeoff between population and standard of living. Nor is it clear that the tradeoff should even be desired at the world level.

A wide range of compromise is possible between population and conditions for living. Different cultures might choose different compromises. Some countries would allow a higher population and accept a lower standard of living. Others would take steps to stabilize population before the capacity of its geography had become so fully committed.

If countries retain the freedom to choose the tradeoff between population and standard of living, then physical equality between countries is not possible. Different countries will arrive at different balances. It is not possible to have both freedom of choice and world-wide equality. If there were to be physical equality on a global scale, some authority would be required to impose uniform standards for the balance between population density and geographical capacity. But such external imposition of population standards is most unlikely to be accepted. However, without such standards, material equality becomes impossible.

Most countries are now acting as if their shortages could forever be met from the outside. But, as world-wide limits to growth are ever more closely approached, there is less slack in the world system. International trade has depended on such slack. Many countries have

supported their population growth with imports. However, as every area becomes more heavily loaded, less is available for others. The time is approaching when each country must more and more meet its growth-induced needs from inside its borders.

If a country believes that solutions for its stresses should exist outside, then it follows that failure to achieve solutions can be attributed to those on the outside. Both the source of the problem and the potential solution are believed to lie across the border. Such is the basis for war.

Unless population is to be restrained by war and genocide, nations must look inward. By each nation coming to terms with its own geographical capacity, international tension can be reduced.

Suggesting that nations think in terms of being self-sufficient is not a proposal that is favorable to the developed countries. Most industrial countries have been living beyond their geographical means. They have imported energy and resources at low prices, depressed by world excess supply. They have exported manufactured goods at high prices, sustained by world shortage of industrial capacity. But the imbalance is reversing. Energy and resources are becoming scarce, and prices will rise. Manufacturing capacity and technical skills are becoming widespread, and relative prices will fall. To live within their own capabilities most industrial countries face a more traumatic transition than many developing countries. Of all countries, Japan is probably most vulnerable. Without foreign energy, foreign resources, and foreign markets, and that time is approaching, Japan will be a far different place. Close behind Japan in vulnerability comes Western Europe, and then the United States. Countries with energy and resources are fast acquiring the industrial knowledge and plant to manufacture with their own labor for their own markets.

If industrial countries see their plight as having been caused by countries that withdraw supplies and markets, then war is apt to be chosen as the obvious solution. But if industrial countries

recognize their own growth as having been the cause of social and economic pressure, then internal adaptation, with any necessary reduction in standard of living, becomes the appropriate solution. Through a general recognition that growth pressures come from national, not international, actions, we may avoid atomic war as the ultimate limit to growth.

This proposal to put limits to growth in the national context is quite the reverse of most present discussions for sharing and for human equality that suggest others have created the problems and must be responsible for solutions. Such is the basis for distrust and conflict.

Any course of action contains weaknesses and disadvantages. Three would be of particular concern in choosing the national route for dealing with growth. First, countries that limit population and thereby sustain attractive living conditions must be able to police their borders and prevent being inundated by people from countries where population has grown further beyond the national capacity. Some countries may be so small, or with such unfavorable border conditions, that they cannot adopt policies of self-sufficiency. Such countries will probably be absorbed into larger political units. Second, individual freedom to migrate across national borders will be severely restricted when overpopulation is recognized as the critical limit in every country. Third, some international discipline will still be needed to prevent any one country from serving itself at the expense of other countries. For example, a country must not be allowed to discharge pollutants that threaten other countries or the rights of others in the oceans and atmosphere. But these are a more limited and manageable set of issues than trying to cope on a world-wide basis with population control, equality, common standards for quality of life, and yielding of national sovereignty to a powerful central authority.

So this second change of perspective is from limits to growth as a single world issue to decentralization of limits for separate handling by individual nations. Each nation would then address the questions of how much population it could support at the standard of living it desired; how to develop its future without taking environmental capacity

from others; and how to discourage population from rising above the target level. No country, rich or poor, seems to have accepted such internal questions as its top priority agenda. Instead, most countries are using external issues of world energy, distribution of food, and international investment as ways to divert citizens from the difficult task of shaping their own future. I see no promising avenue but to reverse foreign adventurism, turn inward, establish in each country national self-sufficiency, and solve global problems by doing so in each part separately. This position enhances national and global stability in a world of geographic and cultural diversity.

C. NATIONAL DYNAMICS

The third change in perspective is from concern exclusively with the life cycle of growth to the multiplicity of dynamic modes inherent in a national economy.

Different groups focus on different time behaviors in our social system. In the time dimension, some, as in this conference, are concerned with the very long run, while most people in commerce and government do not look beyond the short-term business cycle. For those interested in stresses arising from growth, and who are seeking a viable long-run equilibrium, the life cycle of growth extends several hundred years backward and at least a hundred years forward, and encompasses the period of exponential growth, the transition period of growth being suppressed by environmental forces, and a future equilibrium. But, by contrast, the business cycle perspective is only some five years wide. With such different time horizons, lack of serious communication between the two groups is almost inevitable. Failure to see things the same way is unavoidable because, in the time dimension, the two groups have little in common.

But the economic system contains intermediate modes of behavior that can perhaps serve to bridge the gap in viewpoints. The literature

of politics, public attitudes, and economics is rich in discussion of important changes occurring over several decades. Our social systems contain the diversities of structure necessary to create many simultaneous modes of behavior spread throughout the time range from a few months to a few centuries.

The intermediate modes have been relatively neglected. Historians treat the rise and fall of civilizations--the time span of growth, equilibrium, and collapse. The business press, economics books, and political debate all overemphasize the three- to seven-year business cycle. But dynamic modes of behavior extending over ten to a hundred years receive less than their due attention.

The intermediate dynamic modes in society are important. Not only do they fill the behavior spectrum between the extremes, but, more importantly, they generate symptoms that confuse and mislead those who focus on either extreme. The changes whose characteristic time intervals are in the 15- to 60-year range can easily be misinterpreted as belonging to either the business cycle or to the life cycle of growth. When the intermediate modes are attributed to one extreme or the other, then the extremes are incorrectly perceived and the middle ground of dynamic behavior is lost as a common basis for communication.

After the work at MIT on World Dynamics and The Limits to Growth, we have been looking since 1972 at the full range of time spans of behavior in social and economic change at the national level. We believe that social and economic change must be coupled together and that national policies and national dynamics represent the most useful political perspective.

In the System Dynamics Group at the MIT Sloan School of Management, we have been developing a system dynamics model of the national economy that contains some fifteen industrial sectors, worker mobility networks between sectors for both labor and professionals, and household, demographic, financial, and government sectors. When fully assembled the model will have nearly a hundred times as much detail as the Limits to

Growth model.

Simulation studies have been made with one and two industrial sectors of the National Model (of some fifteen ultimate sectors). Even this limited part of the whole economy generates simultaneously a wide range of periodic fluctuations. In other words, several different modes of cyclic behavior originate from the interactions of inventories, production rate, acquisition of labor and capital, and the supply interconnections between different sectors.

In the complexity of an economic structure, many different dynamic modes of fluctuating activity can exist simultaneously. Much puzzling economic behavior probably arises from multiple modes superimposing their patterns of interaction. If the identities of the separate modes are not recognized, symptoms arising from one part of the system may be misinterpreted and applied to policy control points in some entirely different part of the system. Policy is then ineffective because it only remotely relates to the symptoms from which came the motivation.

An extensive literature exists on each of three different modes of periodic fluctuation in the economy--the business cycle, the Kuznets cycle, and the Kondratieff cycle.

The business cycle is the well-known short-term fluctuation of business activity. It appears as varying production rates and employment with peaks of activity separated by some three to seven years. Business cycles lie within the experience of most persons and are the focus of attention in the press and in governmental policy debates.

The Kuznets cycle is much less generally recognized. It exists as a statistical observation that many time series in the economy seem to contain a periodicity of some 15 to 25 years. Cause of the Kuznets cycle has been a subject of debate. Other cyclic modes in the economy are of sufficient magnitude to mask the Kuznets cycle from

popular awareness.

The Kondratieff cycle is a fluctuation in the economy of some 50 years between peaks, which are separated by long valleys of stagnation.

Simulation studies with the new System Dynamics National Model of the economy have shown that realistically modeled physical and policy relationships in the production of consumer durables and capital equipment can generate simultaneously all three major periodicities--business cycle, Kuznets cycle, and Kondratieff cycle. The short-term business cycle can result from interactions between backlogs, inventories, production, and employment without requiring involvement of capital investment or changes in consumer income. The Kuznets cycle is consistent with policies governing production and the acquisition of capital equipment. The 50-year Kondratieff cycle can arise from the structural setting of the capital equipment sector, which supplies capital to the consumer goods sector but also at the same time must procure its own input capital equipment from its own output.

The business cycle is well known and need not be elaborated here. The Kuznets cycle seems less important to questions of growth and can be omitted from this discussion. But the Kondratieff cycle may be of major significance in coupling short-term national decisions to long-term growth policy.*

D. THE KONDRATIEFF CYCLE

The Kondratieff cycle (also known as the "long wave") was forcefully presented in the literature by Nikolai Kondratieff in the 1920's. Kondratieff was a Russian economist who made extensive studies of long-term behavior in the Western capitalist economies. His statistical

*A more complete discussion of the three cycles can be found in Jay W. Forrester, "Business Structure, Economic Cycles, and National Policy," System Dynamics Group Memorandum D-2245, Alfred P. Sloan School of Management, MIT (speech given at the National Association of Business Economists 17th Annual Meeting, Boca Raton, Florida, October 7, 1975).

analyses of economic activity showed that many variables in the western economies had fluctuated with peaks about 45 to 60 years apart. Such peaks of economic activity have been placed around 1810, 1860, and 1920. Kondratieff believed that the 50-year cycle was caused by internal structural dynamics of the economic system, but he did not propose a sharply-defined set of mechanisms. Most other economists took the position that the long-term fluctuation had occurred but that it was caused by events external to the economy, such as gold discoveries, wars, major technical innovations, changes in financial institutions, and fluctuations in population growth.

The Kondratieff wave has not been taken very seriously because of the absence of a coherent theory of how it could be caused. Nevertheless, events since Kondratieff first discussed the long wave are bringing the subject back into the public press. After the peak in economic activity around 1920, the Great Depression of the 1930's represented a typical low point in such a cycle. Now, some 50 years after the preceding peak, economic activity has again risen to a high level, but with many signs of faltering. The question arises, is the Kondratieff wave of underlying structural origin, and does it have significance for current policy?

The Kondratieff cycle is of special interest in the limits-to-growth discussion. Much of the apparent industrial growth of the last several decades may merely reflect the rising phase of the 50-year cycle as it came out of the depression of the 1930's. If so, recent growth trends are not sustainable into the future regardless of long-term limits. A downward phase in the Kondratieff wave, if such lies in the near future, could produce a few decades of industrial equilibrium during which a sustainable future could be charted.

Recent computer simulations suggest that long-period cyclic behavior can arise from the physical structure connecting consumer goods sectors and the capital sectors. A sufficient cause for a 50-year fluctuation appears to lie in the movement of people between

sectors, the long time to change production capacity of capital sectors, the way capital sectors provide their own input capital as a factor of production, the need to develop excess capacity to catch up on deferred demand, and the psychological and speculative forces of expectations that can cause over expansion in the capital sectors.

Figure 1 shows behavior in one model configuration of a consumer goods sector connected to a capital equipment sector. A 50-year periodicity appears in the capital sector.

Although the behavior in Figure 1 is not yet well understood and does not occur in all simple two-sector configurations, it seems reasonably certain that the processes of production and capital equipment procurement, and the relationship between consumer and capital sectors, have the potential for producing a Kondratieff-like cycle.

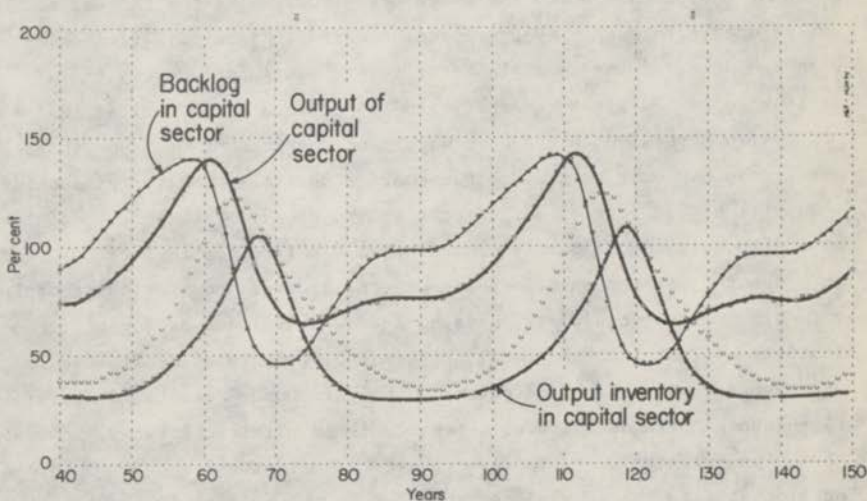


Figure 1. Kondratieff cycle appearing in the capital sector.

A mode like that in Figure 1 can be strongly determined internally by being unstable for small variations and bounded by nonlinearities for large amplitude. Such a mode grows quickly from any triggering disturbance and tends to sustain itself. It is especially persistent and not easy to influence. If such a mode exists in real life, it is probable that changes over the 50-year interval in psychological attitudes, propensity to take risks, and efforts to sustain the upward growth phase by monetary expansion will all tend to accentuate the fluctuation.

Investigation of this long-wave mode is incomplete. Yet it is of sufficient potential importance that even preliminary hypotheses are worth calling to the attention of this audience. The most fundamental sequences in the long-wave mode, starting from the depression years at the bottom of the cycle, seem to be: 1) slow growth of the capital sector of the economy; 2) gradual decay of the entire capital plant of the economy below the amount required, while the capital sector is unable to supply even replacement needs; 3) initial recirculation of output of the capital sector to its own input whereby the capital sector at first competes with its customers for capital equipment; 4) progressive increase in wages and development of labor shortage in the consumer sectors that encourage capital-intensive production and still higher demands for capital equipment; 5) overexpansion of the capital sector to a capacity greater than required for replacement rate in order to catch up on deferred needs; 6) excess accumulation of capital investment by consumers (housing and durables) and by durable manufacturers (plant and equipment); 7) eventual failure of capital equipment users to absorb the output of the overexpanded capital sectors; 8) sudden appearance of unemployment in the capital sectors; 9) reversed change in relative costs to favor a more labor-intensive consumer production that further diminishes the need for new plant; 10) rapid collapse of the capital sector in the face of demand below even the long-term average needed by the economy; and 11) spreading discouragement and slow decline of the excess capital stock through physical depreciation.

Present symptoms in the economy seem consistent with the top of a Kondratieff wave when the top is viewed as a time of excess capital expansion. New tankers are leaving the shipyards and going directly to anchorage. Aircraft are going into storage. For the first time since the late 1920's, many cities have an excess of office space. The interstate highway system has been built and another is not needed soon. The condition of the auto industry is partly due to the consumer stock of automobiles having been filled. The financial plight of the real estate investment trusts and the decline in home construction suggest that we already have more housing than the economy can support.

If indeed there is a long-wave fluctuation in the economy involving a rise and decline in the capital sectors, it significantly affects thinking about both the business cycle and the life cycle of growth. The business cycle has usually been interpreted without regard to the possibility of its being superimposed on a long wave. On the other hand, part of recent apparent growth may have come from the fluctuating long wave rather than from the life cycle of growth.

1. Business-Cycle Stabilization vs. the Kondratieff Cycle

Interaction between the Kondratieff cycle and the business cycle may have led to erroneous explanations of recessions and depressions, and to inappropriate policies for economic stabilization. Recessions since World War II have been less severe than those in the immediately preceding decades. Anti-cyclic monetary policy and "fine tuning" of the economy have often been given credit for reducing business downturns between 1945 and 1970. But another explanation grows out of considering how different kinds of economic fluctuations can combine.

Figure 2 shows three simple sinusoids as stylized representations of the business cycle, Kuznets cycle, and Kondratieff cycle.

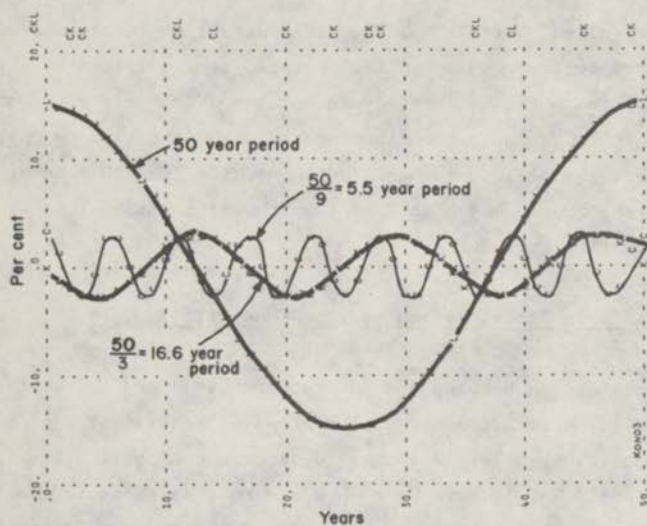


Figure 2. Three sinusoidal curves representing business, Kuznets, and Kondratieff cycles.

Figure 3 and Figure 4 are on an expanded time scale and show the three sinusoids added together. The numbers give the time in years for economic expansions and contractions. Figure 3 covers the rising segment of the long wave and Figure 4 the falling segment. Note that the upward thrust of the long wave before the peak in Figure 3 causes the business cycle to seem to have strong and long expansions with weak and short recessions. On the other hand, after the peak in Figure 4, the long-term decline weakens and shortens the expansion phase of the business cycle and deepens and lengthens the recession phase.

By itself, the superposition of business cycles on a long-term fluctuation would explain the milder recessions since World War II and also the recent deeper recession if an underlying long wave exists that is now topping out.

On the basis of simultaneous fluctuating behaviors having different time durations and coming from different parts of the economic system, one need not invoke monetary policy to explain either the milder recessions in the 1950's and 1960's nor the worsening recession now.

2. Growth vs. the Kondratieff Cycle

Those concerned about the hazards of growth may also be misled by the Kondratieff cycle. Much of the upward thrust of economic activity in the last three decades may be a consequence of expansion in the capital sectors that seems to go with the rising phase of the long wave. If so, the economic processes do not sustain themselves forever. When capital expansion has run its course, accompanied by heavy debts and non-sustainable rates of public and private borrowing, an internal readjustment begins. In such a readjustment the capital sectors decline, unemployment increases, people move back toward the food and consumer products sectors, and growth is suspended or reversed. Such conditions will confuse the limits-to-growth debate. Those attempting to reduce unemployment and increase short-term economic growth may blame the downturn

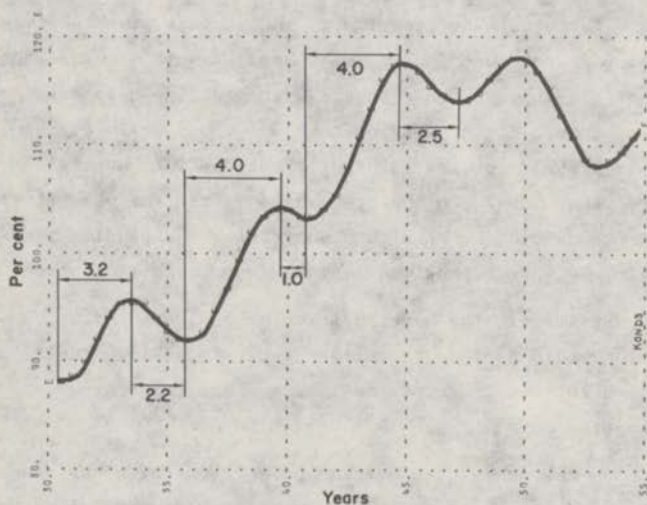


Figure 3. Addition of sinusoids during rising part of the long wave.

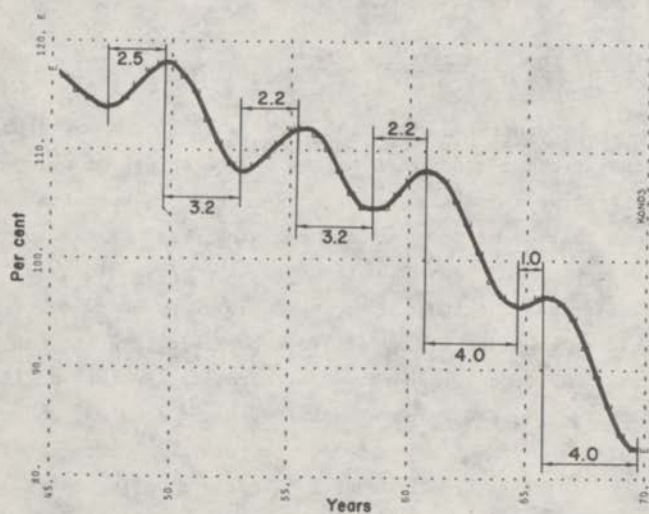


Figure 4. Addition of sinusoids during falling part of the long wave.

on environmentalists and those who have favored an equilibrium society. On the other hand, those who are working for a viable equilibrium may misinterpret a downturn in the long wave as being the arrival of a non-growth future. Instead, the downturn, like the upward phase, is a condition of imbalance. It would not represent a sustainable equilibrium. The social and economic forces would continue to be severe. Consensus would still not exist on goals for the future.

A period of slackening growth, arising as a consequence of the internal dynamics of the Western economies, should be taken as an interlude in which to accelerate the discussion of future alternatives.

E. SUMMARY

The particular form of the limits-to-growth debate is often irrelevant to effective action. To lead discussion into more practical channels, three changes in perspective have been suggested--less emphasis on physical limits and more on social limits, less concentration on world limits and more on national limits, and less attention to a single dynamic mode (be it either the life cycle of growth or the business cycle) and more on how the short- and long-term forces in the economy interact.

The controversy over physical limits creates a public impression that growth is desirable if physical limits can be overcome. To the extent that physical limits are expected to be pushed back, emphasis on stabilizing population and consumption is reduced. But rising population density causes an increase in social stresses. Mistrust between groups, personal alienation, disrespect for government, civil strife, and international conflict become the ultimate limits to growth. Discussion of limits should have more inputs from psychology, political science, and sociology.

The debate on limits to growth has tended to focus on the world as a whole, major regions, and on issues outside any particular person's own country. Such a broad and external perspective implies that the

problem belongs to someone else. But no country can evade the social and physical limits to growth. Furthermore, only nations have effective political processes. The external perspective sees difficulties as being imposed from the outside and war against others as the solution. The internal perspective sees world pressures as the sum of local pressures and striking an internal balance as the solution. Until the inner perspective is established, major war becomes increasingly more likely as the limit to growth.

Different groups concentrate on different behavior modes in society. The public, business, and government are enmeshed in the short-term business cycle. At the other extreme, proponents of an equilibrium society deal almost exclusively with the life cycle of growth. Between are dynamic changes running for several decades. Such intermediate modes are ignored or misinterpreted by those interested in each extreme of time span.

If, indeed, there are Kondratieff fluctuations of some 50-years duration in the economy, they significantly affect thinking about both the business cycle and the life cycle of growth. The business cycle has usually been interpreted without regard to the possibility of its being superimposed on an intermediate wave of several decades in length. Interaction between Kondratieff cycles and the business cycle may have led to erroneous explanations of recessions and depressions, and to inappropriate policies for economic stabilization.

The intermediate modes spanning decades are long enough to shape attitudes and social values. The intermediate modes can be a bridge for closing the communication gap between short-term and long-term national interests.

Those who would be leaders toward a sustainable future must thread their way through the multiple cross currents in social and economic change. Effective leadership must be built on sensitivity to the important tradeoffs, awareness of institutional influence, and knowledge of the social processes shaping the future. Toward these

ends, the tradeoff lies between social and physical limits; the institutional choice favors the nation over multi-national organizations; and relevant social processes must include the intermediate changes occurring over several decades that create expectations, cause population movement, and restructure economies.

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Senator CULVER. Thank you very much, Dr. Forrester, for your typically provocative statement.

We will now hear from the second witness, Mr. Graham T. T. Molitor, who is director of government relations for General Mills, Inc., and former director of research for the White House Conference on the Industrial World Ahead. Mr. Molitor.

STATEMENT OF GRAHAM T. T. MOLITOR, DIRECTOR OF GOVERNMENT RELATIONS, GENERAL MILLS, INC., AND FORMER DIRECTOR OF RESEARCH, THE WHITE HOUSE CONFERENCE ON THE INDUSTRIAL WORLD AHEAD

Mr. MOLITOR. Thank you, Senator Culver. Before I start my statement, my congratulations to you for championing what must seem to many as merely academic and perhaps of theoretical significance only; whereas, a more careful anticipation of the future and the changes that it holds is a key to sound and lasting public policy determinations.

Answers aren't easy to come by, but hearings like these can help tremendously. The "limits to growth" debate argues, with considerable persuasion, that there are certain inherent limitations of resources and materials and that we are rapidly approaching the end, unless we reform our ways.

Some of these systems do indeed appear to be reaching outer limits. History, however, has constantly disproved prophets of gloom and doom who warn ominously that the end is near. Time after time new answers and alternatives have been found. There is no compelling reason to believe that modern day affairs will be much different.

The familiar statement, "we've gone about as far as we can go," is a vast understatement. Almost any aspect of society one looks at may seem to have an apparent end or a supposed ultimate. Over the course of history, however, such apparent limits in a system, time and time again, have been surpassed or bypassed. I think that society is open ended, not closed. Mankind eternally is engaged in the process of making change. There are realistic alternatives.

Though human beings constantly and relentlessly search for perfection, once a new high is attained, the so-called level of perfection becomes a mere jumping off point. From the new vantage point it seems that still higher levels of attainment are possible. As something new is mastered or widely accepted, it becomes standardized and eventually is taken for granted.

In turn, the status quo gives rise to new unrest, a new desire for novelty and experiment. New experiment is merely the precursor event, the leading edge of change which signals that still another wave of change is underway. Peddlers of gloom and doom have always been around. Predictions of doomsday abound throughout history. The doomsayers, pessimists, and negativists include prominents such as Ellul, Mumford, and Marcuse.

Often such critics are premature in many of their conclusions, failing to take proper account of man's adaptability, and underestimating the capacity of technology to overcome current problems.

One of the best known pessimists, Robert Malthus, drew attention to the allegedly unavoidable and imminent peril of geometrical population expansion overtaking the arithmetical growth of food supplies.

The Malthusian fallacy has been exposed by the most severe critic—the test of time. Through technology, wonders have been wrested from the soil. In America today, less than a mere 4 percent of the work force is employed in agriculture.

The Club of Rome studies, widely disseminated by the book entitled "Limits to Growth," portray a five-faceted tale of gloom and doom emphasizing: Exponential growth of population; overindustrialization; limitations of finite natural resources (now being rapidly depleted); limitations of food supplies; and exponential rates of pollution contamination.

Despite undertakings such as recycling, birth control, pollution abatement, and other technological factors (the Malthusian fallacy, for one), the general conclusion is that such efforts are mere palliatives and that population growth and industrialization eventually will overtax a fixed and finite resource base.

Ultimately, the world faces health impairment and even threats to life itself through environmental degradation and entropy. The basic concept is that growth cannot continue indefinitely on a finite planet. The shocking impact of these contrived computer projections and simulations have set many people to thinking about our future.

How do we avoid exaggeration surmised from premature findings or hypotheses from being accepted as fact? Charges are easy to level. Proving the contrary is often difficult. Sometimes, given the state of the art, it can even be an impossible proposition.

Dr. Handler recently cautioned against marshaling selected scientific data to support a biased position. He has warned that political leaders often decide issues less on scientific grounds than on which position is more popular. This cannot be allowed to happen if public policy judgments are to be sound and enduring.

The optimistic outlook is a positive one. It views man in control of his destiny, instead of its hapless captive. Optimists share an abiding belief in the perfectability of mankind. Optimists view the future neither as inflexible and determined nor unordered and chaotic, but rather as open to intelligent direction.

Optimism is consistent with the rational tradition of Western intellectual history and the scientific method in ordering affairs in advanced industrialized nations.

Optimists are not disillusioned with runaway technology, excessive economic growth, population explosions, entropy, or any of the other fates posed by doomsayers. The optimist regards such sayings by doomsayers, pessimists, and negativists as useful alerts to potential hazards or foibles with which he must cope. Such challenges are perceived as situations that can be overcome by man's conscious, well-planned efforts.

Man is beginning to assume a new role as architect of his destiny, and is unwilling to remain merely its passive and helpless captive.

The question is not whether we can change the world, but what kind of world we want. This is a fundamental change. There is an optimistic outlook about inventing the future. It abandons the more pessimistic view of man as a captive of fate.

No longer is man willing to stand outside the process of change but, instead, is firmly indicating a desire to participate in it.

Planning affords an opportunity to write a new charter for humanity and for mankind everywhere. Planning provides the opportunity for ushering the desirable future into the present.

I don't believe in the Invisible Hand as a guide to destiny, bumbling through, haphazard technological development, and irrationality inherent in nonplanning. I take strong exception to all of this.

Society has reached a point where things cannot be permitted to happen fortuitously. No longer can society have faith that fallout from innumerable private decisions will add up to rational excellence and an improved quality of life.

The very size and complexity of activities has given rise to the need for more conscious direction. Impacts from far-reaching decisions have become so broad and pervasive that deliberate effort is required to contain negative effects and stress positive benefits.

Without conscious planning, society lurches from one crisis to the next. We wait for confrontation to bring issues into focus at the last minute. In such situations responses may be hasty and ill-considered.

Science and technology may no longer be allowed to lead us wherever they will. The major effort will be aimed at containing the negative effects of technology.

The mere fact a particular technology can be developed is not necessarily sufficient justification to proceed. The risks of the technological undertaking may be too great—for example, doomsday weapons.

In some cases a more efficient application of resources may be possible. With limitations on finite resources already beginning to impact on decisionmaking, utilization of the most efficient technology may be required.

In today's world the locus of certain determinations has gravitated away from the individual and toward the group. Huge expenditures involved in large undertakings often require mandatory collective action which is beyond the individual and can't be undertaken unilaterally. For example, no individual has it within his power to secure for himself air pollution control or better traffic conditions through mass transit. Such undertakings require collective action by the group and organized decisionmaking.

Increasingly, collective public judgments will determine whether to proceed with development of new technologies—for example, suppression of nuclear weapons, terminating development of a supersonic transport.

In decisions made now the future is committed. Social issues may require long-range planning of 5 to 20 years. The rebuilding of American cities may entail a 35-year cycle. Leadtimes of 50 years are suggested for effective planning and management of mineral and natural resources, and 30-50 years for bringing technology from initial stages of development to the point of playing a major role in the economy. Long-range forecasting and planning has become a virtual necessity.

A primary threat inherent in planning is the issue of control implicit in central decisionmaking. The political debate involves issues of centralization versus decentralization and concentration versus diffusion of power. The ebb and flow of history is a constant one be-

tween centralized and authoritarian power versus decentralization and individual freedom.

Traditionally America has relied upon pluralistic power centers. Competing groups tend to serve as a check and balance, one against the other.

Through a better and more scientific understanding of public policy issue genesis and development, wiser alternatives can be selected. Such an approach enables change—that is the key concept, change—to be accommodated with minimal disruption.

Public policy anticipation affords an opportunity to minimize, if not avoid, the sometimes protracted, overlapping and always costly defense of the indefensible.

Merely muddling through—benevolent neglect as some have described it—is too erratic, too costly, and even too dangerous a course for arriving at good public policy decisions.

I have been experimenting with some new techniques for predicting the emergence and the dates for probable implementation of public policy issues.

Based on an examination of thousands of issues with wide currency during that period, it appears possible to predict the emergence and probable implementation dates; of almost any new public policy or law; for any country; at any point in history.

That is a large statement to make. Next I shall provide some support to back it up.

Anticipating specific public policy developments covering 10 years ahead is possible with a very high degree of accuracy.

Such predictions are possible simply because public policy determinations don't come as a bolt out of the blue. New public policy isn't made overnight. Instead, new laws emerge out of an evolutionary process.

At bottom are certain structural forces—which gain powerful inertias over time—that give rise to what I term issue environments. Combinations of these structural undercurrents come together as an issue progresses, and it is this convergence of forces that raises such noise or dissonance that public attention and demand for action requires political response.

Most issues in this country require at least 10 years, as a general rule, to wend the course from initial appearance to final implementation. A 10-year period, often a tortuous course of adversary confrontation, provides a substantial period of time for discussion and debate before a new public policy change is forged into law.

The process of change invariably starts with aberrant and unique events which, when aggregated, reveal meaningful patterns. Scientific/technical/professional authorities undertake to comment on and analyze such phenomena.

Shortly thereafter the observations of leading authorities are reduced to writing and begin appearing in leading literature. In turn, the written data base provides widespread dissemination of the ideas, increases the level of activity, and gives rise to various kinds of organizations which institutionalize the cause and provide a sustained base for advocating change.

Politicians, who reflect the popular will, pick up such trends, and leading jurisdictions—both domestic and international—implement them.

The six forces plotted tend to converge at some point, and that confluence can best be described as a point of critical mass—the takeoff point for serious and intensive action on a public policy issue.

Some of these trends have given rise to a major shift in political emphasis today. Population growth, urban concentration, rapid industrialization, and ill-considered applications of new technologies have prompted a search for a new-issue nucleus upon which political party fate may hinge. The old social welfare hub of issues with which the Democratic Party dominated national politics for over three decades is passé.

That is not to say that social welfare issues are no longer important or no longer of concern. Clearly they are. The point is that new lifestyles based on affluence, abundance, inversion of the income pyramid, shift from “have-nots” to “haves,” and a complicated welter of broadly established social welfare programs now provide basic minimum guarantees.

During the late 1930’s and into the 1950’s, the main concern was to alleviate human suffering resulting from the vagaries of industrialization. During this period, responsibilities for the human costs of business operations were assumed, and the welfare state ushered in a wide variety of social welfare enactments.

This wide-fronted assault has blunted the crusade for further massive social welfare change. Such humanitarian issues are of another era. They grew out of the social pathos of the 1920’s. No longer are they the focus of controversy.

Most significant is the fact that they have ceased to be the crusade around which national political parties can continue to be rallied. New crusades are being formed.

One thing is certain: The new politics will be urban-oriented. Urban because by the year 2000, an unbelievable 85 percent of all Americans may be crowded into “anthill” metropolitan areas comprising merely 4 to 7 percent of America’s land space.

Teaming cauldrons of humanity now living in New York, Tokyo, and London are already encountering a new genre of problems.

Today intense crowding into urban antheaps, accompanied by increased clustering of manufacturing in those self-same areas, may generate crisis-proportioned pollution problems. The party dedicated to solving unique problems plaguing urban Americans can build loyalties that mean votes.

The side effects of modern progress—air, water, solid waste, noise, thermal, radioactive pollution, to mention only a few—constitute prominent targets of this new movement.

Considerable evidence indicates that physical health itself may be imperiled by changes in the air we breathe, the water we drink, and the new environment. Man is what he consumes, and his estimated consumption includes: 3 pounds of food solids; 4½ to 6 pounds of water; and 30 to 60 pounds of air.

Contamination of these vital necessities can be injurious to man. The problems will increase unless appropriate corrective measures are taken.

In this lexicon of the new politics, one of the issues business now faces is depicted in a chart in my prepared statement which identifies the evolution of corporate enterprise and lists several examples of new participatory activity.

On the upswing today are various forms of sharing management with "publics" other than corporate management. Scholars view the last several hundred years of man's existence as a period involving the extension of political democracy. With political democratization well along, they believe the next several hundred years may be a period of economic democratization, a situation in which nonbusiness groups have a bigger say-so in business management.

The contemporary international marketplace is another arena of change. It is being vastly transformed into an arena of titans. Increasingly, U.S. multinational corporations will have to be of sufficient size to compete against monolithic State economic enterprises of socialist and Communist countries, against the European cartels, "Japan, Inc.," and other government-run enterprises, as well as against the rapidly growing economic might of regional trading blocs.

Largest among the centralized State trading monopolies are Trade Ministries of the U.S.S.R. After decades of ideological and economic isolation, we lose sight of the fact that Russia is the second largest economic unit in the world. U.S.S.R.'s GNP is about one-half as large as that of the United States; whereas, West Germany and Japan have a GNP about one-quarter the size of the United States or one-half the size of the U.S.S.R.

More important is the fact that Russia's rate of real growth for the last several decades has bested the United States by a factor of almost two.

It is the way the concentrated economic power is organized that is important. In the agricultural area, for example, the European Economic Community, now being expanded to include the European Free Trade Association members—as well as being enlarged by certain preferential trading relationships with the British Commonwealth countries—constitutes a sphere of economic power that is enormous.

The so-called EEC Common Agricultural Policy knits these countries closely together and results in disruption of established and traditional trade patterns. The United States can get shut out. In some sectors it already has been.

There is a long-term trend toward bigness in business as well as in all modern-day institutions. The movement is toward larger blocs of power and fewer of them. The trend has been intensifying and is likely to continue to do so. This change is international in its sweep and it is likely to continue unabated.

In a sea of giant competitors one question must be asked: Does the "bigness is bad" concept make sense? Bigness is the one overshadowing conclusion drawn from this analysis of the realities of global economic competitive forces abroad in the world today.

Bigness, more than ever before, is essential to survival. This highlights and challenges the fallacy of current antitrust thinking in the Congress and the regulatory agencies.

The fixation that "big is bad per se; let's break them up," is 180 degrees out of phase with the new realities of titanic global economic competition. A parity of scale among giants is indicated.

To sum it up, the lexicon of major issues describing the new politics is long and yet to be fully defined. Key focal points include environmentalism and a whole host of urban-related problems; the changing structure of business enterprise—particularly antitrust policy, international competition, and economic democratization.

Whatever the exact form, the new issue base upon which political parties will be dependent revolves around a "quality of life" theme. The exact issues are yet to be pinpointed and fashioned into a new package which can bestir the public interest, captivate the spirit, and provide a new political direction for the Nation. Thank you.

[Mr. Molitar's prepared statement follows:]

CHOOSING OUR ENVIRONMENT: CAN WE
ANTICIPATE THE FUTURE?

--The Future of Growth and the Environment--

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Limits to Growth Debate. The "Limits to Growth" debate argues, with considerable persuasion, that there are certain inherent limitations of resources and materials and that we are rapidly approaching the end, unless we reform our ways. Some of these systems do indeed appear to be reaching outer limits. History, however, constantly has disproved prophets of gloom and doom who warn ominously that the end is near. Time after time new answers and alternatives have been found. There is no compelling reason to believe that modern day affairs will be much different.

The familiar statement, "we've gone about as far as we can go," is a vast understatement. Almost any aspect of society one looks at may seem to have an apparent end or a supposed ultimate. Over the course of history, however, such apparent limits in a system, time and time again, have been surpassed or bypassed. I think that society is open-ended, not closed.

Eternal Change. One thing certain is change. Almost everything is subject to change of one kind or another. Mankind eternally is engaged in the process of making change. There are realistic alternatives. Hardly anything is constant, stable, or absolute. In the process of change, social systems experience "eternal dissonance." Ceaseless discontent and criticism from some quarter never abates because people incessantly search for something better, for improvement. Perpetual unrest is the seedbed of change.

Though human beings constantly and relentlessly search for perfection, once attained, the so-called level of perfection becomes a mere jumping off point. From the new vantage point it seems that still higher levels of attainment are possible. As something new is mastered or widely accepted, it becomes

standardized and eventually is taken for granted. In turn, the status quo, gives rise to new unrest, a new desire for novelty and experiment. New experiment is merely the precursor event, the leading edge of change which signals that still another wave of change is underway. Human inquisitiveness never seems to be quite satisfied--it searches for the next step forward, the next plateau. So, ultimates are often merely momentary delusions. When at one point we think that we have reached the zenith, the new utopia, we simply are ready for the next step. This starting and stopping process is evident in the study of history. For the foreseeable future it is destined to continuation.

Mankind seems predisposed to search for and strive longingly toward perfection. Perfection, however, appears to be a constantly elusive goal. This ceaseless search may be viewed as one of the greatest cosmic swindles or a main reason for human greatness. The perspective is tempered by optimism or pessimism.

The Pessimistic Viewpoint. Peddlers of gloom and doom have always been around, and predictions of doomsday abound throughout history. The doomsayers, pessimists, and negativists include prominents such as Ellul, Mumford, and Marcuse. Such writers play on fears of the uncertain and unknown to unleash emotional responses. Still other doomsayers speak with actions louder than words--"back to nature" groups, drop-outs, counter culture fadists, anti-establishment activists, among them. Rousseau, Thoreau, and others had much the same idea many years ago. Often such critics are premature in many of their conclusions, failing to take proper account of man's

adaptability, and underestimating the capacity of technology to overcome current problems.

One of the best known pessimists, Robert Malthus, drew attention to the allegedly unavoidable and imminent peril of geometrical population expansion overtaking the arithmatic growth of food supplies. The Malthusian fallacy has been exposed by the most severe critic--the test of time. Through technology, wonders have been wrested from the soil. In America today, less than a mere 4% of the workforce is employed in agriculture. Yet these few workers are capable of producing such abundance--for consumption both domestically and abroad--that until recently production actually was restricted by taking land out of production, imposing acreage limitations, and otherwise discouraging maximum potential output.

Doomsayers portray a dismal picture for the lot of mankind. Some conclude that the individual is hopelessly submerged as a mere cog in a machine. (Huxley, Orwell). Pessimists see man living in densely populated, urban-industrial-technological society, and warn against:

- destruction of privacy;
- restriction on participatory activities (politics, industrial decision making, etc);
- a stripping away of dignity;
- technological unemployment;
- machines (EDP) taking over;
- increasing dependence on machines (triggering totalitarian control measures to forestall disruption of an overly dependent system);
- alienation;

- a fear that technology is autonomous and uncontrollable;
- a concern that technology is destructive of human values generally.

The Club of Rome studies, widely disseminated by the book entitled Limits to Growth, portray a five-facted tale of gloom and doom emphasizing:

- exponential growth of population;
- over-industrialization;
- limitations of finite natural resources (now being rapidly depleted);
- limitations of food supplies;
- and exponential rates of pollution contamination.

Despite undertakings such as recycling, birth control, pollution abatement, and other factors (the Malthusian fallacy, for one), the general conclusion is that such efforts are mere palliatives and that population growth and industrialization eventually will overtax a fixed and finite resource base. Ultimately, the world faces health impairment and even threats to life itself through environmental degradation and entropy. The basic concept is that growth cannot continue indefinitely on a finite planet. The shocking impact of these contrived computer projections and simulations have set many people to thinking about our future.

Overstated distortions and dire predictions of gloom and doom are counter-productive. If the heralded dismal state of affairs does not materialize, a credibility problem can emerge which might transform public concern and alarm into disillusionment and apathy. Such indifference can become a key barrier to motivation and actually thwart further progress in resolving the basic problems.

Coping With the Overstatement of Gloom and Doom. What do we do with a society having a penchant for overstatement, hysteria, apocalyptic gloom and doom? What do we do in our country when critics tend to cite isolated and

extreme examples as endemic, as the norm? How do we cope, to avoid exaggeration surmised from premature findings or hypothesis from being accepted as fact?

Whatever we do, we must straddle a thin line between inspiring informed dialogue and popular distribution of sound ideas while avoiding, at all costs, censorship of free discussion which is so vital to democracy. Public policy issues and debates sometimes do get out of bounds. Dr. McKetta of the University of Texas recently wrote about the witch hunts of just a few hundred years ago in New England. This ill-founded hysteria cost many innocent lives. Certain women accused of witchcraft were condemned by public opinion, fear, ignorance, and misinformation. Disproving the unknown, for them, was difficult. Proving innocence —conclusively—involved a burden of proof extraordinarily difficult, if not impossible, to carry. Charges are easy to level. Proving the contrary is often difficult. Sometimes, given the state of the art, it can even be an impossible proposition. Dr. McKetta's solution was to use our knowledge, not our fears, to solve the real problems.

Allen Otten, recently editorializing in the Wall Street Journal, cautioned policy makers against, "knee jerk reactions to every gloomy warning in the recent atmosphere of public skepticism." Reminiscent of the witch hunt period, he reminds us how extraordinarily easy it is for a few persuasive people (with some technical background) to allege harm and how extraordinarily difficult it is to demonstrate this is not the case.

Columnist Otten provides another incisive reminder, commenting on Senator Muskie's views on issue straddling. Senator Muskie, listening to an expert make the classic statement: "on the one hand, and on the other hand," mused how he

would like to meet a one-armed scientist someday. The Senator's wry comment highlights that there are often two sides or two viewpoints on an issue, especially when the issue falls in the gray zone, the in-between area. This is a perspective well worth keeping in mind as public debates on controversial issues heat up.

Dr. Handler, in a speech before the American Association for the Advancement of Science, cautioned against marshaling selected scientific data to support a biased position. Stressing his point, he warned that political leaders often decide issues less strictly on scientific grounds than on which position is more popular. In other words, by default, judgements may be made less on empirical evidence and more on public opinion pulsations. A United States Senator commenting in the Congressional Record warned that "an unjustifiably frightened public often forces policy decisions that are unwise or counterproductive." These things can not be allowed to happen, if public policy judgements are to be sound and enduring.

Balance and perspective were urged by Dr. Mary Good, of the University of New Orleans in a recent New York Times article. Radioactive emissions from nuclear power plants expected by the year 2000 might increase the number of cancer deaths by 8.7 per year, she stated. How you make that point, can depend upon your point of view. To provide balance, she suggested making comparisons with equivalent risks. Dr. Good equated these nuclear power risks to an increase of a fraction of an ounce of overweight, or to smoking 0.03 cigarettes per year, or to driving an automobile vehicle one mile per year. In conclusion, she called for distinguishing between "hard" scientific data and opinions, interpretations, and subjective judgements.

The Optimistic Viewpoint. The optimistic outlook is a positive one. It views man in control of his destiny, instead of its hapless captive. Optimists share an abiding

belief in the perfectability of mankind. Optimists view the future neither as inflexible and determined nor unordered and chaotic, but rather as open to intelligent direction. Optimism is consistent with the rational tradition of Western intellectual history and the scientific method in ordering affairs in advanced industrialized nations.

Optimists are not disillusioned with "runaway" technology, excessive economic growth, population "explosions", entropy, or any of the other fates posed by doomsayers. The optimist regards such sayings by doomsayers, pessimists, and negativists as useful alerts to potential hazards or foibles with which he must cope. Such challenges are perceived as situations that can be overcome by man's conscious, well-planned efforts.

Conflict between the optimistic and pessimistic point of view will continue to underscore major political debate in the years ahead.

Planning our Destiny. Fatalism is fast fading. Man is beginning to assume a new role as architect of his destiny, and is unwilling to remain merely its passive and hapless captive.

The question is not whether we can change the world, but what kind of world we want. This is a fundamental change. It is a change that has come about only within the last few years. It is not so much a change in capacity or in events, but rather an important change in outlook and attitude. Man has become aware that he possesses the capacity to affect change, and not merely be affected by it. He realizes that he can manage change, not merely be managed by it. There is an optimistic outlook about inventing the future. It abandons the more pessimistic view of man as a captive of fate.

Man is finally expressing an interest with respect to a willed, rather than a

fated future. No longer is he likely to remain a victim of autonomous, directionless change. No longer is he willing to stand outside the process of change, but instead is firmly indicating a desire to participate in it. And today rather than wishful visionary thinking about merely preferable futures, creative man possesses the understanding, capacity, and power to realize almost anything to which he sets his mind and his will.

Planning The Future. Planning affords an opportunity to write a new charter for humanity and for mankind everywhere. Planning provides the opportunity for ushering the desirable future into the present.

Many writers have called for increased planning and reasoning in managing change, and have been super-critical of relying on the "Invisible Hand" as a guide to density, "bumbling through", "haphazard technological development", and "irrationality" inherent in non-planning.

Planning is a necessary tool for getting things done. By anticipating problems, we are able to assess them, assign social priorities, and husband resources to meet them.

One writer has gone so far as to contemplate the possibility of a "planning party" winning elections in 1976. This speculation is unduly optimistic, but it does highlight the importance of planning in today's society.

Planning For Change. The major difference of our time is that man knows that he has it within his grasp to affect change and not merely be affected by it. In other words, he is not the captive of fatalism, just drifting along--he does have control over destiny. He is an architect of destiny, not its helpless captive.

We are at a point of a great transitional divide in history. We have created enough knowledge to do anything that we want to do--even creating life itself

increasingly is within our grasp. We can do anything that we wish to do, provided we apply the needed capital, manpower and material resources to get on with the job. All we need to do is plan--set priorities--make necessary national budget commitments, and marshal the necessary resources.

Forces Giving Rise to Need For Planning. Society has reached a point where things cannot be permitted to happen fortuitously. No longer can society have faith that "fallout" from innumerable private decisions will add up to rational excellence and a quality of life. Aggregations of power have become so great and so pervasive that decisions of major institutions wielding such power approach a point where events no longer will be allowed to come about by the "silent hand" or silent forces. Responsible exercise of such power is required.

The very size and complexity of activities has given rise to the need for more conscious direction. Impacts from far-reaching decisions have become so broad and pervasive that deliberate effort is required to contain negative effects and stress positive benefits. The urban industrialized megapolis in which most men live is predominately of their own creation. Metropolitan refuges have enabled man to limit vagaries of the unchecked forces of nature (flood, draught, forest fire, etc.). Because man made it, he has the power to shape it at will. Such technological mastery is unprecedented. Leaders today have an extraordinary power to regulate the quality of their principal habitat--if they choose to do so.

Technology and the often awesome impact of its consequences make it certain that modern society will require more and more planning. Haphazard technological development with smaller scale consequences went largely unnoticed in a developing country prior to the Industrial Revolution. Then there was little need for concern. Thereafter, more deliberate direction emerged as recognition

became more widespread concerning the impact of consequences that could be massively disruptive. Haphazard, unplanned, accidental impacts of technological and social policy are being resoundly criticized today and a more conscious planning is now being called for.

The future is determined by forces over which man can interpose control. Fortuitous events, sometimes catastrophic in their sweep, must be avoided.

Without conscious planning, society lurches from one crisis to the next. We wait for confrontation to bring issues into focus at the last minute. In such situations, responses may be hasty and ill-considered.

Up to this point, technology had been the determinant of social conditions. We are coming into an era when just the opposite may be the case. It's got to be somebody's business to constrain the excesses which threaten society and our environment. The ramifications of individual acts upon larger society increasingly will come under control. The new areas of public concern involve ecological imbalances of "runaway" and irresponsible maximum development of resources, better conservation techniques in marshalling natural resources, and the difficult social problem of population control.

Controlling Technology. Science and technology may no longer be allowed to lead us wherever they will. Men now strive toward deliberate direction of technology. It is not enough to merely accept all consequences. The major effort will be aimed at containing the negative effects of technology. Constraint on second order consequences blunting adverse impacts before they ever get underway may be particularly severe.

The "innocent, gee-whiz, who-knows-what-will-come-of-it" attitude toward

technology will no longer suffice. New accuracy is needed to anticipate impacts. Social, economic, political, and technological consequences and implications must be more carefully assessed. Consciously forecasting such long-range impacts will focus new responsibilities upon public and private sector leaders.

With the new technologies man can do most anything he wants, according to some observers. In other words, technology is no longer a limiting factor. This means that given necessary material and human resources, whatever we can imagine, we can do. However, the mere fact a particular technology can be developed, is not necessarily sufficient justification to proceed. The risks of the technological undertaking may be too great--e.g., doomsday weapons. In some cases, a more efficient application of resources may be possible--with limitations on finite resources already beginning to impact on decision making, utilization of the most efficient technology may be required. In other cases, costs--monetary and social--may be too high to warrant development. Technology is no longer to be just harvested, it will have to be planted too. Many difficult decisions will have to be made by tomorrow's wielders of power.

In today's post-industrial world, technological capabilities are ahead of man's (tradition-bound) thinking, and far ahead of "institutional lag" (which fetters implementation). It is this very availability of technological capacity that could be applied to solve social problems but which is not applied, thus leaving problems unsolved, that gives rise to tensions. Fired by rising expectations, such tension points describe tomorrow's political problems.

Mastery and power over physical things may be followed by mastery over social affairs. Up until now, man has been up against nature; from now on, he is likely to be up against his own nature. Throughout history, man's fight has been against

nature--a relentless fight simply to obtain the quantitative necessities of food, shelter, and clothing in order to maintain his survival. In post-industrial society, the daily struggle for life has become much easier and blessings of affluence and abundance have changed the fight to one against human nature. Confronting social problems will bring into issue the contradictions between the perfectability and the corruptability of mankind. These apparently irreconcilable confrontations will test great minds.

National Goal Planning and Values. In today's world the locus of certain determinations has gravitated away from the individual and toward the group. Huge expenditures involved in large undertakings often require mandatory collective action which is beyond the individual and can't be undertaken unilaterally. For example, no individual has it within his power to secure for himself air pollution control or better traffic conditions (mass transit). Such undertakings require collective action by the group and organized decision making. Typically, response to such questions has been through institutions, and increasingly that institution is Government.

The magnitude and significance of the choices that are coming up require societal consensus. Increasingly, collective public judgements will determine whether to proceed with development of new technologies--e.g., suppression of nuclear weapons, terminating development of a super-sonic transport. Coming up are the extremely difficult and ethical and moral considerations--consider, for example, the question of whether (and how) to proceed with the development of artificial life forms.

The very process of planning itself requires conscious explication of value choices and conflicts that remain hidden or subliminally submerged in the intuition

or under laissez faire operating conditions of individual choice and the less conscious workings of the market system. Scientific decision making techniques demand clarity in specifying goals, thus serving to make value preferences explicit.

Effective organization and operation of society requires integration, a macro-scale perspective, an end view of the sort of society we want to plan and build. Professor Raymond Bauer points out, "there is not consensus on what the model of society should be like." Such a perspective--ultimately on the design of society itself--implies basic value choices.

Development of social sciences and information technologies for predicting decision impacts will focus attention upon alternative choices involving subjective and philosophical considerations (values, justice, policy justification, etc.). Value choices become much sharper when choosing between competing concepts. Greater skill in anticipating likely consequences of action will require a more deliberate articulation of values. Politicians must develop and articulate a new value base. Electors must become more familiar with such abstractions if informed decisions are to be made by them.

The Planning Process--How Urgent Are The Needs? In the decisions made now, the future is committed. Social issues may require long-range planning of 5-20 years. The rebuilding of American cities may entail a 35-year cycle. Lead times of 50 years are suggested for effective planning and management of mineral and natural resources, and 30-50 years for bringing technology from initial stages of development to the point of playing a major role in the economy. Dr. Jack Calhoun suggests population balance be achieved over a period of 100,000 years. Some planning may require decades, centuries, or even longer. Planning

is an on-going process; it never stops. Day-to-day planning is short-sighted and sometimes outmoded or simply inadequate to the magnitude of such tasks. Long range forecasting and planning has become a virtual necessity.

Centralized Authority and Control. A primary threat inherent in planning—which becomes increasingly essential as numbers and size grow—is the issue of control implicit in central decision making. The larger the population, the greater the pressure for more regulation and contriving. The scope and magnitude of undertakings are such that affirmative and strong-willed leadership is required to have much impact and bring about intended results. All of this implies strong control and central leadership with ever-present possibilities for authoritarian and totalitarian take-over. Aldous Huxley fears over-population will precipitate social unrest and economic insecurity and make dictatorship a "virtual certainty." More control seems inevitable.

Other commentators, however, see new electronic communications and computers as a way toward devolution of government authority and responsibility. They see decentralization, with these new capabilities, making possible "both increased authority at the lower levels and almost instant national coordination."

The political debate involves issues of centralization vs. decentralization, concentration vs. diffusion of power. Authoritarian omnipotence triggers a countervailing drive for decentralization and increased individual freedom. The ebb and flow of history is a constant one between centralized and authoritarian power vs. decentralized and individual freedom.

The acceptance of planning can hinge on the spirit with which it is implemented and on the emphasis with which it is taken. Less stress on social control and manipulation, and more emphasis on choice and creative change might help clear

the rhetoric, and help enlist support.

Avoiding Undue Reliance Upon Technocratic Elites. As society grows ever larger, the individual's knowledge about it decreases correspondingly. The average individual knows very little in depth about public issues. The knowledge explosion further impairs the ability to keep up with affairs in one's own particular field of interest, let alone matters involving public policy making.

Increasingly, the average American is less capable to judge, make informed decisions, or even to acquire (yet alone assimilate) the complicated and often highly technical information necessary for contemporary public policy decisions. The average individual all too often has little more than a generalized opinion toward public policy issues.

Widespread public apathy toward participatory democracy has defaulted the power of decision making, by and large, to the technocrats. As affairs become increasingly complicated, the average individual doesn't want to be saddled with the responsibility of making decisions. He simply feels incompetent to make the judgement. He delegates that responsibility to experts. Even the typical medical patient facing life or death choices, when offered a range of treatments, invariably will defer the decision to the medical expert in charge. As events become increasingly complicated, more and more decision making responsibility will be deferred to experts.

Trends toward elitism in decision making are well underway. The intellectuals, the scientists and technologists--the technocratic elite--have an increasingly dominant role in opinion making and public policy formulation. The shift of power in public policy decision making from elected representatives to the technocrats

bears careful watching.

Issues have become so large, complex, and inter-related that the average person no longer can comprehend them. Largely by default, the technocrats take over. Technocracy or meritocracy results. The tendency toward expert-dominated decision making by technocratic elites taken together with other concurrent trends, such as those toward bigness and centralization, raise new problems.

Some commentators taking a more elitist line feel "men have finally listened to sound advice and have turned over their political power to the experts to be cared for in a way that is truly best for them." Others critically observe that, "just as once before the Churchmen offered a vision of salvation after a life of suffering, so now the priesthood of technocracy will offer a planned future." Can we endure benevolent despots?

Narrow-minded technocrats suffer from "trained incapacity." Most simply are unable to appreciate considerations outside their area of specialization. Over-specialization among experts involves inherent limitations. Specialists come to know more and more about less and less, they lose sight of the forest for the trees. This is where generalists come in. Politicians usually are generalists. Due to the sheer number and increasing complexity of issues, the average elected official does not have the technical expertise and full understanding of the many issues with which he must deal. Increasingly, elected officials rely on the full time bureaucracies--the technocrats. Securing judicious balance between citizens, elected officials, and the experts poses a constant challenge to democracy.

Enhancing Opportunities For Participatory Democracy. Traditional democratic theory has always placed a high value on participation. The notion of every opinion being freely expressed to arrive at a collective truth or consensus is an unrealistic

ideal. It grows dimmer as population grows ever larger and society becomes increasingly complex. The concept may have fit New England town meetings where face-to-face debates took place and when issues were simpler and within the layman's understanding.

Lofty as the ideal may be and as much as it may be desired by the people, direct participation has been an illusory goal. The deplorable fact is that political apathy is widespread among the masses, particularly in technologically advanced societies. There is vast public indifference to big problems. Private citizens not only are preoccupied with everyday personal affairs, but competition with other events results in a studied indifference toward public policy matters. The average person doesn't like to make massive research efforts required to understand the complicated issues posed today. Finally, citizens feel incompetent to deal with big issues that are increasingly remote from them.

Assuming that "silent Americans" are indifferent, unconcerned, oblivious, going along for the ride, and would rather let someone else do it, getting democracy to work will be increasingly tougher as the population grows ever larger.

Making Elected Officials and Bureaucrats Responsive to the Popular Will. One central challenge is making government institutions--including elected officials as well as the entrenched bureaucrats--more responsive to the popular will. Modern electronic data processing techniques and new communication technologies hold considerable promise.

In these times of extremely rapid change, the opportunity to vote once each 4 years on indirect mandates for national or state policy direction is dubious. More frequent electoral consultations are being called for. Four year terms for the President and Governors and six year terms for Senators may be obsolete.

There is a paradox to "more responsive" but shorter terms for elected officials.

The longer officials hold office, the more competent and better qualified they become to discharge responsibilities of their office.

To help secure greater "responsiveness" from legislators, suggestions have been made not only to shorten office terms, but to limit the number of terms legislators enjoy as well. The approach is a "Congressional equivalent of the Twenty-second Amendment limiting the Presidential term of office." The full ramifications of this approach—including scrapping of the "seniority system"—would force new reappraisal of the entire Congressional process.

Computerized Plebecites. One of the suggestions for making elected officials more responsive to the popular will involves nationwide televised addresses on public policy issues, followed by popular votes ("instant voting") on the issues. Such instantaneous direct democracy could be accomplished by television, touch telephones, and computerized vote analysis. Home computer consoles, when they are developed, might even be used for two-way information exchanges. Video issue reviews followed by votes of confidence, referenda, or national plebecites could be called for, arranged, and conducted in a matter of hours. Voter education would be accomplished at home without interfering with the individual's usual routine. Results would be known in a few hours. This would help to align elected leaders with the popular will.

Making Pluralism Work. Responsibility for fashioning the future or inventing the future is an awesome power. Who should be authorized to put forward official and oftentimes self-fulfilling prophesies? Whose wisdom can be trusted? Who can sit as an impartial arbiter? Among the choices:

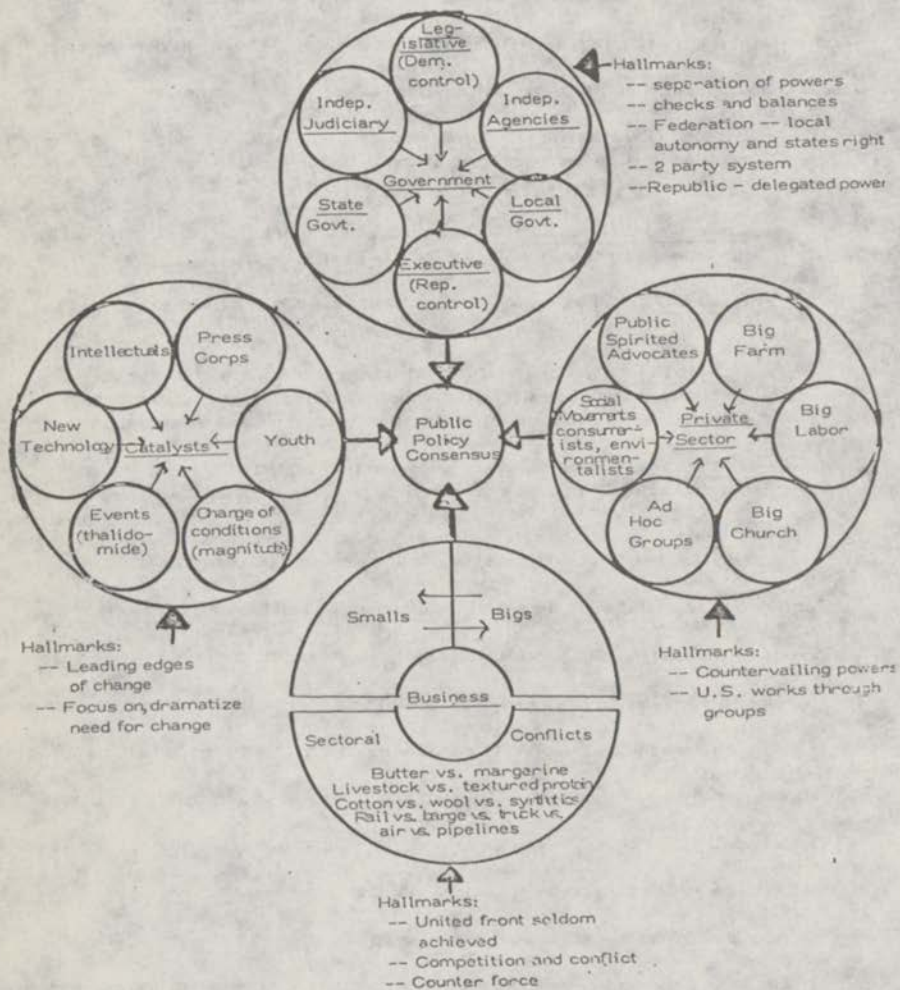
- Elected Government officials have the legitimacy of the popular will, are champions of the public interest, but generally lack technical sophistication.
- Government bureaucrats have stability and provide continuity, possess expertise, but lack practical experience.
- Business has the power, but self-interest and profit-seeking impairs their impartiality.
- Religious leaders are traditional keepers of ethics and morals and possess impartiality, but are restrained from government planning by Constitutional separation of church and state doctrine.
- The masses are impulsive, prone to over-react, lack expertise, but collectively possess common sense.
- Technocrats as scientists possess expertise required, but are limited in vision as a result of over-specialization.

Each group has its strengths--and weaknesses. The best answer is a balance of all these groups. Amidst diversity is strength, a sense of perspective. The democratic answer is obvious. The task is to "orchestrate" these key power centers into a harmonious resolve to conquer problems that plague us today. A beginning can be made by consciously recognizing the need for synthesis.

Traditionally, America has relied upon pluralistic power centers. Spokesmen of these groups, with the power of their organizations behind them, seek to represent views of the organization in public policy decision making. The pluralistic power centers are moderated by a system of countervailing powers. Competing groups tend to serve as a check and balance, one against the other. Increasingly, the role of government is that of becoming the arbiter among such pluralistic power centers. The following chart provides one view of pluralism in public policy matters.

AGENTS FOR CHANGE IN FASHIONING U.S. PUBLIC POLICY

Lags Inherent In Pluralistic and Adversarial Process



The Need For Anticipating Public Policy Change. Through a better and more scientific understanding of public policy issue genesis and development, wiser alternatives can be selected. That much is obvious. Such an approach enables change--that's the key concept, change--to be accommodated with minimal disruption. Public policy anticipation affords an opportunity to minimize, if not avoid, the sometimes protracted, overlapping and always costly defense of the indefensible.

Merely muddling through--benevolent neglect as some have described it--is too erratic, too costly, and even too dangerous a course for arriving at good public policy decisions. Reliance on little understood forces--the "silent hand"--posited on innumerable and unstructured events which somehow vote up to effective action increasingly is outmoded. The management of massive modern, subtle, complex, invisible and qualitative technologies requires much more time and attention. Careful explication of our problems and reasoned analysis is needed now, more than ever before.

Public Policy Prediction Model. Over the last years I've been experimenting with some new public affairs techniques for predicting the emergence and the dates for probable implementation of public policy issues. So far, something on the order of 100 techniques have been developed and are now being refined. I'm going to share just a few of these concepts with you. I don't have any definite or final answers at this point, but hope to corroborate a number of definite theories within a short while.

The basic approach is worldwide, concentrating on the era of industrialization,

starting from the mid 1800's. Based on an examination of thousands of issues with wide currency during that period, it appears possible to predict the emergence and probable implementation dates:

- of almost any new public policy or law;
- for any country;
- at any point in history !

Anticipating specific public policy developments covering 10 years ahead are possible with a very high degree of accuracy. Some more general predictions can be made as far as 60-70 year ahead; however, such long range predictions are less accurate.

Such predictions are possible simply because public policy determinations don't come as a bolt out of the blue. New public policy isn't made overnight. Instead, new laws emerge out of an evolutionary process. The actual appearance of an event is preceded by long shadows, by long trains of activity. At bottom are certain structural forces--which gain powerful inertias over time--and give rise to what I term "issue environments." Some forces giving rise to public policy issues may span as much as one hundred years, or even longer. Combinations of these structural undercurrents come together as an issue progresses, and it is this convergence of forces that raises such "noise" or dissonance that public attention and demand for action requires political response.

I haven't come across a recent Federal issue that took less than six to ten years to progress from initial discussion to enactment. Most issues in this country require at least ten years, as a general rule, to wend the course from initial appearance to final implementation. To be sure, there are many false starts and many uncertain trumpets. A ten year period, often a tortuous course of adversary confrontation, provides a substantial period of time for discussion and debate before a new public policy change is forged into public policy.

Six Indicators of Change. The first few charts depict some key factors for tracking and measuring the evolution of public policy changes. The process of change invariably starts with aberrant and unique events which when aggregated, reveal meaningful patterns. Scientific/technical/professional authorities undertake to comment on and analyze such phenomena. Shortly thereafter the observations of leading authorities are reduced to writing and begin appearing in leading literature. The written data base provides widespread dissemination of the ideas, increases the level of activity, and gives rise to various kinds of organizations which institutionalize the cause and provide a sustained base for advocating change. Politicians, who reflect the popular will, pick up such trends, and leading jurisdictions--domestic and international--implement them. Each one of these factors, structured in a time-series manner, tends to follow an "S-curve" pattern. At the outset the slope takes off slowly, then follows a steep slope, and finally there is a tapering off. Each sequence of events plotted in these next six charts involves "leads and lags" one to the other. The six forces plotted tend to converge at some point, and that confluence can best be described as a "point of critical mass"--the "take off" point for serious and intensive action on a public policy issue.

Leading Events. The following chart depicts how isolated events, often viewed at first as aberrants, the bizarre, or the unique, eventually are pulled together. Aggregation of the events leads to analysis and discerning patterns or trends. The first heralding of an idea may be an emotional response to limited, often faulty data and inadequate supporting rationale. The penchant for over-reaction in democracies threatens to distort items in early discussion out of proportion. Over time the understanding of new phenomena come into sharper focus.

LEADING EVENTS —

deployed in a time-series, isolated events build up to a "data wall" describing an abuse or excess so unconscionable that remedial action is virtually assured.

KEY TRACKING POINT: "Data walls" amass to "critical mass", "take off" points at which time (depending on "cost benefits") a virtually irreversible course for change is reached.

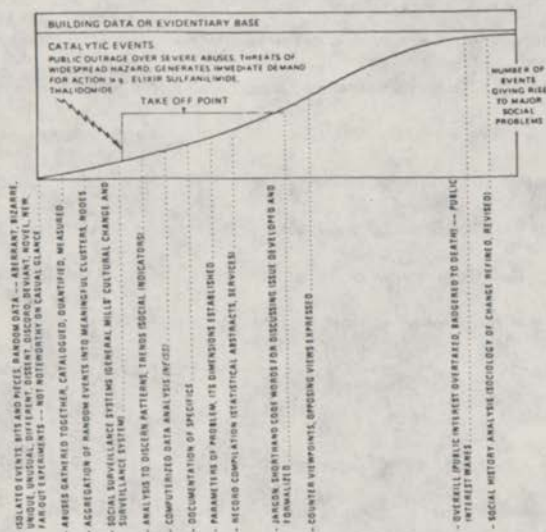


FIGURE 1.

Leading Authorities/Advocates. This next chart describes how random phenomena or isolated events are focused upon by authorities and advocates who begin discussing and interpreting the new issues. The schema patterns the various kinds of authorities who get involved with the issues. Notice that most politicians tend to take up causes rather late in this time-series. One commentator has suggested that politicians take up causes when 20 to 40 percent of the people have begun to think that an idea is right. The average elected official reflects the views of his constituency, so this general conclusion is not really surprising. Statesmen and ideological leaders enter the process much earlier, of course.

LEADING AUTHORITIES/ADVOCATES —

Intellectual elites who analyze and articulate social problems tend to emerge around an issue — likewise the victimized, even though less capable of articulating their plight, emote their feelings and often become powerful propaganda symbols for change.

KEY TRACKING POINT: Usually less than 12 innate innovators can be pinpointed on any issue; by monitoring these early vanguards whose ideas ultimately are diffused widely, early indications of change can be forecasted.

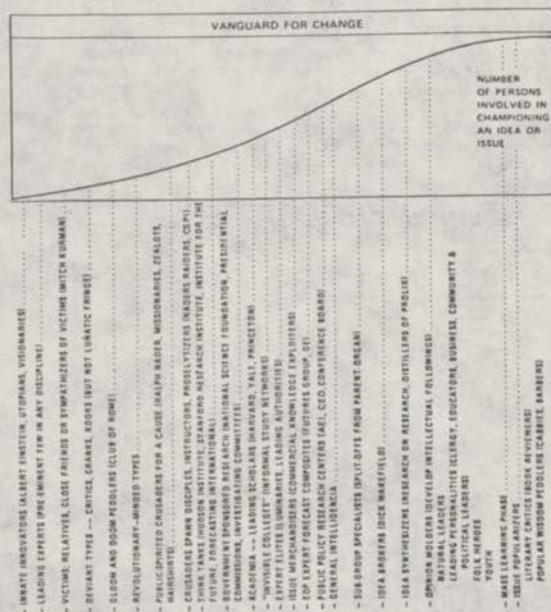


FIGURE 2.

Leading Literature. The third chart displays the ways experts begin to review and set their comments on issues down in permanent form. After informal and orally stated commentaries, authorities begin to write about the ideas, reducing conjecture and hypothesis to the permanent written record. Oftentimes there is as much as a one to six-year lag between the time when an expert first talked

about an idea until the time the views are finally published in a serious journal. Catalogued here is a continuum of the various kinds of journals indicating approximations of lead-lag relationships between the various classes of literature. The real core area, of course, is the scientific, technical, and professional literature base. Once that fundamental base is well established, ideas are well on their way toward implementation.

LEADING LITERATURE —

Written records progress from modest beginnings to the more prolix which serve to explicate parameters and refine thinking, then to mass literature for public consumption.

KEY TRACKING POINT: Various classes of literature emerge at different times — lead-lag times of up to 100 years can be involved — therefore, "early warnings" about emerging problems can be obtained from careful literature search.

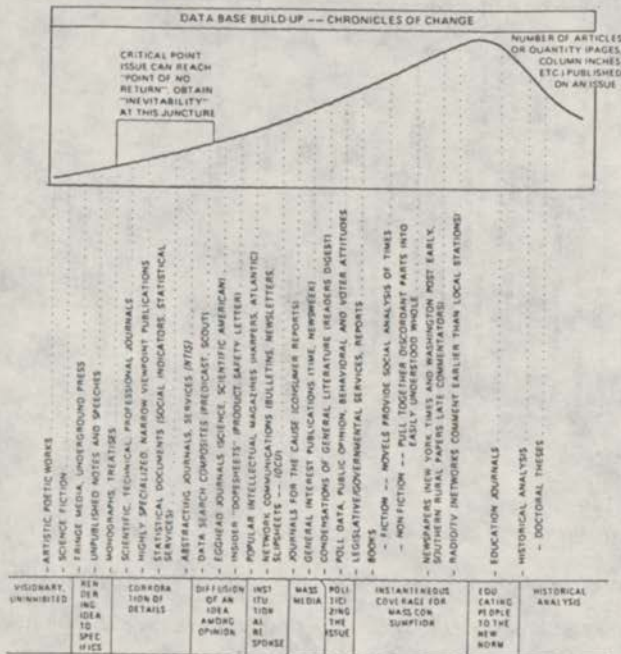


FIGURE 3.

Leading Organizations. As all of this is happening, various organizations of one sort or another begin, informally at first, and then much more formally, to gather around an issue—a lightning-rod effect occurs (see next chart). Organizations usually develop at a local level and ultimately tend to snowball toward an international level. The organizational base provides continuity and a cadre for pursuing the issue.

LEADING ORGANIZATIONS —

INNATE INNOVATORS ATTRACT ADHERENTS WHICH BUILD UP INTO FORMAL FOLLOWINGS AND USUALLY BECOME INSTITUTIONALIZED.

KEY TRACKING POINT: GROWTH OF INSTITUTIONAL BACKING FOR A CAUSE — WHETHER MEASURED BY NUMBER OF ORGANIZATIONS, PERSONS INVOLVED OR RESOURCES COMMITTED — FOLLOWS EXPONENTIAL INCREASES WHICH TEND TO FORCE SERIOUS CONSIDERATION OF THE ISSUE BY PUBLIC POLICY MAKERS

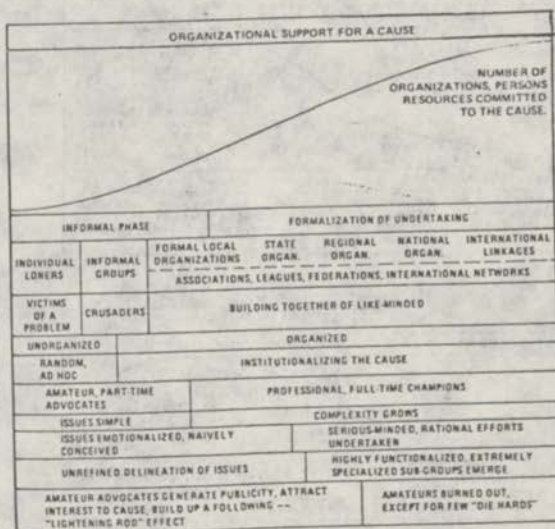


FIGURE 4.

Leading Political Jurisdictions. During the course of these processes, certain political jurisdictions, what I term "precursor jurisdictions," begin to implement new policies (consult plots on the following chart). Once a new law is implemented by a number of jurisdictions, both internationally as well as domestically (at state and local levels), other jurisdictions follow suit, provided the policy proves to work. The process of other jurisdictions following the lead of early adopters results in what I call "diffusion patterns." For different periods of history particular countries or groups of nations have been "early adopters." Sweden is now such a leader, and has been an early implementer for at least 10-20 years.

LEADING POLITICAL JURISDICTIONS —

Early innovators and experimenters show the way to others — after idea is proven, other jurisdictions emulate, follow.

KEY TRACKING POINT: Some 4-6 countries (and often simultaneously their internal local jurisdictions) invariably are the first to innovate by implementing new public policy ideas — these leading jurisdictions vary with different times in history and for different issues.

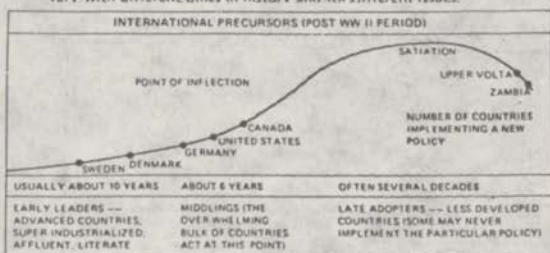
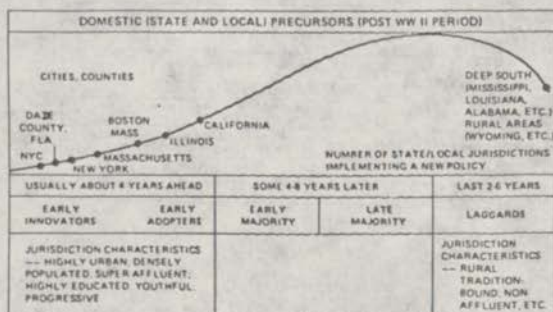
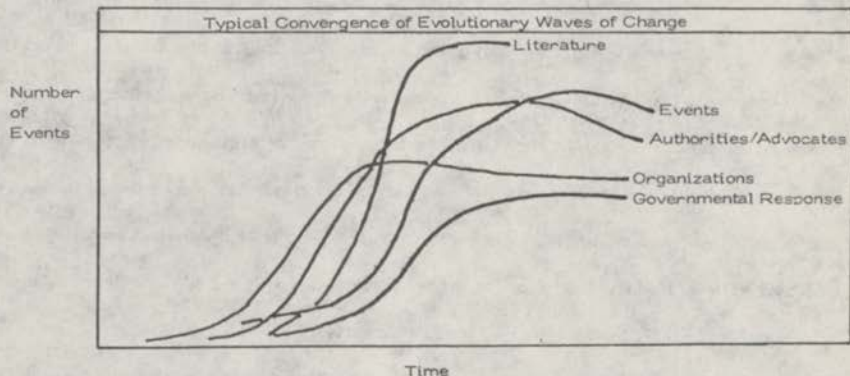


FIGURE 5.



I recently spent several weeks in Scandinavia, primarily in Sweden, interviewing some one hundred private authorities and public officials to develop an in-depth understanding of impending consumer policy developments. So far, it appears there are something less than one thousand consumer issues not yet implemented by the United States Federal government. A substantial portion of these issues are likely to be implemented in the U.S. within the next 20 years or so. In many cases, Sweden has already implemented the proposals, often as much as 2-10 years ahead of the U.S.

To sum up, these six forces follow sequential patterns, at some point swelling toward a convergence, thereby creating a "dissonance" within the society that demands laws to "correct" the problems. As events flow along over time, authorities/advocates pick up on them; next, the number of published articles builds up to provide a permanent written analysis and wider-spread dissemination; at about this stage, a number of organizations begin to emerge around an issue; bringing the cycle to a close, political jurisdictions finally are pressured to respond.



None of this plotted data is subjective. It's all objective. It's all based on hard evidence. As these trends move along, the rates increase at a very rapid or exponential rate; at this juncture or "take off point" the pace of change itself creates pressures for action. By overlaying the six time-series plots, the point where "data tracks" coalesce forms the point of critical mass, a kind of "take off point", if you will. At this stage the issue has reached the point where it gains receiving intense and special attention. From this point onward, the forward momentum is so strong that the ability to alter the continued course becomes most difficult. At this point one can begin to make some predictions. After having applied this six-step model to several hundred historical issues, it appears to be amazingly accurate.

Early Historical Responses Intolerably Slow. The historic conquering of the nutrition deficiency disease, scurvy, provides a particularly instructive example of chronological tracking. It demonstrates how these processes of change tend to unfold. Rather than going all the way back to the earliest recorded evidence of scurvy in 1500 BC, I will start with the widespread incidence of scurvy in the fifteenth century. At that time the technology of ship construction ushered in the long voyages of discovery. Removed for long periods from fresh fruits and vegetables, the natural sources of vitamin C, scurvy plagued ocean voyagers. Not that scurvy hadn't been a problem prior to this time because of deprivation of natural sources of vitamin C--sieges of castles or even cities, the Crusades, and long winters, all took huge tolls. But, the point is, that with the new technology of long distance voyages and controlled groups of captive persons the problem was drawn acutely into focus. Vasco De Gama sailed, for example, around Africa (1497-8), and about 100 of his 160 man crew died of scurvy. In 1519, Magellan circumnavigated the earth in five ships, and three years later one ship

with eighteen men from the original crew returned, most of the rest lain to their graves by scurvy. You may recall stories about ghost ships sailing aimlessly in the Sargasso Sea; a Spanish galleon was found in 1577 with all persons on board dead from scurvy. It went on and on.

Not until 1747--and notice over 300 years have elapsed already during which hundreds of thousands have died from scurvy--did the Scottish physician, James Lind, conduct his famous experiments while in the service of the British navy and discover limes (citrus) as a cure and a preventative. The time lapse between Lind's experiments and publication of his book, A Treatise On Scurvy, was six years. So, six years after his important find, the report finally appeared in print. It wasn't until 1795--some 48 years later--that the British Admiralty finally ordered daily rations of lime juice--even today the word "limies" is used in referring to British sailors. So much for the military service; it wasn't until 1865--118 years after the first experiments established the correlation--that the British Board of Trade ordered citrus rations for the British merchant seamen. Not until 1911, was vitamin C finally isolated as the causitive agent. Such long delays can no longer be allowed.

SCURVY

1500 B.C.	Earliest written record (Ebers papyrus--Egyptian medical lore)
400 B.C.	Hypocrites described scurvy-like diseases
23-79 A.D.	Pliny the Elder described scurvy-like disease of Roman soldiers in Germany cured by herbs
1260	Crusade of Saint Louis (Egyptian invasion) thwarted by rampant scurvy
14th century	Black Bubonic Plague kills 1/4 Europe's population (25 million deaths); scurvy complications involved

14th century	Improved ship construction allows long voyages--fresh fruits and vegetable deprivation triggers rampant scurvy
1497-98	Vasco de Gama sailed around Africa to India; 100 of 160-man crew died of scurvy
1519	Magellan circumnavigation of earth by 5 ships--3 years later 1 ship with 18 men from original crew returned
1532-95	English Admiral Sir John Hawkins used citrus rations to prevent scurvy
1535	French explorer Jacques Cartier's expedition to Newfoundland--100 of 110 men were dying scurvy; Indians showed spruce fir cure
1577	Spanish galleon adrift in Sargasso Sea; all aboard dead of scurvy
1583	Admiral Sir Richard Dawkins protected crew of ship Dainty with oranges and lemons
16-18th centuries	Texts on lore of scurvy abound citing bizarre causes, treatments, and "cures"
1600	Commodore Lancaster in voyages for East India Co. showed scurvy was preventable
1625	Siege of Breda in Holland--population stricken with scurvy
1703	Siege of Thorn in Prussia--scurvy claimed 5,000 lives
1720	Wars in which scurvy was responsible for severe death tolls: Russians vs. Turks/Austrians
1740	Commodore Anson left England with 6 ships and 1500 seamen--returned 4 years later with 1 ship and 335 men
1747	Scottish physician James Lind experimented in British naval service on 12 patients suffering scurvy and confirmed citrus as a cure--first clinical trial on record
1753	Lind's book published-- <u>A Treatise On Scurvy</u>
1759	Scurvy took toll among English troops that captured Quebec
1772-75	Captain James Cook took every opportunity to stop and replenish fresh fruit supply--lost no men from scurvy; awarded Copley Medal of the Royal Society for successful voyage without scurvy loss

1795	Scurvy took toll of French soldiers in Alps
1795	British Admiralty ordered daily ration of lime juice
19th century	104 land epidemics of scurvy tabulated
1865	British Board of Trade ordered citrus ration for merchant seamen
1867	Over 30,000 cases of scurvy reported during Civil War
1911	Vitamin C finally recognized as causative agent in preventing/curing scurvy
1970	<u>Vitamin C and the Common Cold</u> (book) written by Dr. Linus Pauling

The New Politics--Political Response to Today's Problems. Population growth, urban concentration, rapid industrialization and ill-considered applications of new technologies have prompted a search for a new issue nucleus upon which political party fate may hinge. The old social-welfare hub of issues with which the Democratic Party dominated national politics for over three decades is passé.

This is not to say that social-welfare issues are no longer important, or no longer of concern. The point is that new life-styles based on affluence, abundance, inversion of the income pyramid (shift from "have-nots" to "haves") and a complicated welter of broadly established social-welfare programs now provide basic minimum guarantees.

During the late 1930's and into the 1950's, the main concern was to alleviate human suffering resulting from the vagaries of industrialization. During this period responsibilities for the human costs of business operations were assumed, and the Welfare State ushered in a wide variety of social-welfare enactments:

- unemployment insurance, to protect against up and down gyrations of the economic cycle;
- workmen's compensation, to protect against injuries from industrial machinery;
- social security, to protect senior citizens;
- medical care to protect against catastrophic medical problems.

This wide-fronted assault has blunted the crusade for further massive social-welfare change. Such humanitarian issues are of another era. They grew out of the social pathos of the 1920's. No longer are they the focus of controversy. Most significant is the fact that they have ceased to be the crusade around which

national political parties can continue to be rallied.

New crusades are being formed.

What new crusades?

Urban Focus. One thing is certain: the New Politics will be urban oriented. Urban, because by the year 2000, an unbelievable 85% of all Americans may be crowded into "ant-hill" metropolitan areas comprising merely 4-7% of America's land space. Even within recent years, some 58% of the American population lives in urbanized areas (central cities of 50,000 population or more). These metropolitan areas comprise less than 1% of the 3.6 million square miles in the U.S.

Teaming cauldrons of humanity now living in New York, Tokyo, and London are already encountering a new genre of problems. These precursor jurisdictions are precipitating and now defining tomorrow's public policy problems. Each of these huge sprawling areas is locked in major combat in coming to grips with urban and environmental problems.

Not so long ago urban excesses gave rise to difficult problems. On the European Continent during the 14th century, as large urban cities emerged and grew, the Bubonic Plague wiped out some 25-30% of the entire inhabiting population. Man was not prepared for coping then, and the toll in terms of human life and suffering was an extraordinary one. Adapting the human organism to large social complexes tested the mettle of then-existing technological and organizational skills. The stakes, literally, were life or death. Man did adapt. Sanitation and public health measures were developed and prevented epidemic spread of communicable diseases.

Today, intense crowding into urban ant-heaps, accompanied by increased

clustering of manufacturing in those self-same areas, may generate crisis-proportioned pollution problems. One thing certain, Americans increasingly will demand that the places they live in be healthful, safe, and clean. The environment must be hospitable.

Urban Americans are searching out ways for coping with new-felt needs. The party dedicated to solving unique problems plaguing urban Americans can build loyalties that means votes. Without votes, political parties die.

Environmentalism. Beginning in the 1960's and into the 1970's, Americans began experiencing a new kind of concern involving a new commitment to ameliorate industrial and technological consequences threatening violence to the physical environment. The side effects of modern progress--air, water, solid waste, noise, thermal, radioactive, even extra-terrestrial pollution (rocket part flotsam and jetsam or alien contamination inadvertently brought back from outer space), to mention only a few--constitute prominent targets of this new movement. Negative impacts of industrial technology will eventually be brought under control as this movement runs its course.

Today, new adjustments to the giant-sized urban industrial habitats man has created are required. There are suggestions that man's physical health may be jeopardized by ecological imbalances in overly-stressed environments. Considerable evidence indicates that physical health itself may be imperiled by changes in the air we breathe, the water we drink, and the new environment. Man is what he consumes, and his estimated consumption includes:

- 3 pounds of food solids;
- 4 1/2 to 6 pounds of water;
- 30-60 pounds of air.

Contamination of these vital necessities can be injurious to man--that much is

obvious. Substantial changes in urban air and water supplies have come about since the industrial period onward. The problems will increase unless appropriate corrective measures are taken. Left unchecked, over-population and over-industrialization may overload ecologically balanced systems.

Problems of the Cities. Man's ability to hold up under the rigors of urban-industrial living conditions will receive a thorough going over. Even social and psychological tensions and unrest will be given new scrutiny. Developing knowledge suggests population density may create disruptive social and psychological stresses.

Political institutions faced with limited economic resources and beset by more pressures than they can possibly deal with will be put to the test. Among the tasks looming in years ahead:

- rebuilding cities, creating new towns, developing low cost housing;
- creating low cost rapid mass transit systems;
- controlling all forms of pollution;
- eliminating racial prejudice;
- providing effective education;
- delivering quality medical services;
- wiping out poverty.

Threats to beauty, including intrusion of roadside billboards, general impairment of the city environment, the reverberating impact of sonic booms, and the unsightliness of urban sprawl will stir new demands.

With increasing concern for safety of life and limb, crime in the streets and asocial behavior also will be very much in the forefront. Intensified police action will be needed to discourage or prevent sabotage, civil disturbances, bombings,

burnings, pillaging, urban guerilla warfare, crime, riot, anarchy, protest, disorder, social misbehavior, juvenile delinquency, and the general use of violence as a force for change. Corrective emphasis should be on preventative action.

Urban congestion and choked traffic arteries will increase the pressure for effective mass transit systems and possible restrictive action on private vehicular movements. Traffic jams already cost an estimated \$5 billion yearly. In New York City traffic motor trucks average less than 6 miles per hour; whereas, in 1910, horse-drawn trucks moved at 11 miles per hour. Points of diminishing returns have been reached.

Limitations of the urban-industrial complexes are many. Adjustments are necessary if large scale populations in urban-industrial areas are to thrive. Catastrophic collapse brought on by over-population, or any other excess, can be postponed or avoided by adaptation. Adaptability--that has been the secret of man's mastery over the environment.

One commentator suggests that genetic science may provide a means for "fitting men" to the environmental conditions--"fitting of the survivors," instead of survival of the fittest. Thus, instead of aiming our efforts at changing environmental factors, science and public policy could accept environmental circumstances and merely adapt man to cope with his changing environment. In all likelihood, both adaptation of the human organism and environmental adjustments will be required for survival.

Economic Democratization. In this lexicon of the "New Politics," one of the most fundamental issues business now faces is depicted in the following chart which identifies the evolution of corporate enterprise and lists several examples of new participatory activity.

EVOLUTION OF MODERN ECONOMIC ENTERPRISE

1600-1750
EXPLORATIVE CORPORATION
East India Co. -- by Royal fiat

1750-1940
INDUSTRIAL CORPORATION
Rockefeller, Vanderbilt, Morgan

1940-1970
TECHNOLOGICAL CORPORATION
IBM, Xerox

1970-
PARTICIPATORY CORPORATION
place of the action, New Humanism

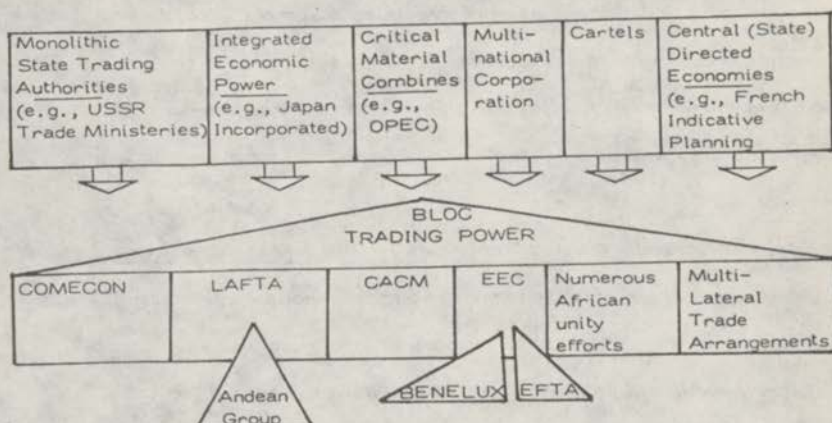
Year	Country	Event	Notes
1871	Chile	First workers' participation in large-scale enterprise in Chile	Workers' representative elected to participate, voted for election, and, together with the employer, elected a joint board of directors. This board elected Workers' Council.
1871	Yugoslavia	First workers' council in Yugoslavia	First workers' council in Yugoslavia.
1873	Austria	First workers' council in Austria	First workers' council in Austria.
1901	Germany	First workers' council in Germany	First workers' council in Germany.
1911	Holland	First workers' council in Holland	First workers' council in Holland.
1912	India	First workers' council in India	First workers' council in India.
1912	Italy	First workers' council in Italy	First workers' council in Italy.
1912	Japan	First workers' council in Japan	First workers' council in Japan.
1912	Sweden	First workers' council in Sweden	First workers' council in Sweden.
1913	Switzerland	First workers' council in Switzerland	First workers' council in Switzerland.
1913	United Kingdom	First workers' council in United Kingdom	First workers' council in United Kingdom.
1914	Denmark	First workers' council in Denmark	First workers' council in Denmark.
1914	Luxembourg	First workers' council in Luxembourg	First workers' council in Luxembourg.

Extension of participation in economic processes isn't anything just academic or merely theoretical—it's already upon us and happening. On the upswing today are various forms of sharing management with "publics" other than corporate management. Scores and scores of approaches already have been implemented in the United States. Abroad, the record goes back many years earlier. Most Social Democratic regimes in the Western European area (particularly those in Western Germany, France, Italy, Norway, Denmark and Sweden) are far along in developing participatory structures (perhaps some 100 different ways, both mandatory and voluntary, are involved). By law, participation by labor and other groups is mandated for boards of directors, advisory groups, and the like. One country mandates that the personnel director be selected by the plant labor organization. Many scholars identify the "democratization of industry" as having begun over 50 years ago. They view the last few hundred years of man's existence as one involving the extension of political democracy. With political democratization well along, they believe the next several hundred years may be a period of "economic democratization."

International Economic Competitors—Battle of the Titans. Globalization of business and economics is fast becoming a reality. What is less understood is the largeness of these new global competitors. The following chart depicts the giant size of modern global competitors.

THE NEW MARKETPLACE --

TITANIC GLOBAL ECONOMIC COMPETITORS



COMECON -- Council for Mutual Economic Aid. Founded 1949. Goal: economic integration USSR-Eastern European satellites. Soviet Union, Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, E. Germany, Mongolia (added 1962). Associate member: Yugoslavia.

LAFTA -- Treaty of Montevideo, ratified 2 May 1961, created free trade area between Argentina, Brazil, Chile, Mexico, Paraguay, Peru, Uruguay, Columbia (30 Sept. 1961), Ecuador (3 Nov. 1961)

ANDEAN GROUP. Created by Declaration of Bogota (16 Aug. 1966), including Columbia, Chile, Venezuela, Peru and Ecuador: Bolivia joined in 1967 -- to offset power of 3 largest LAFTA members (Brazil, Mexico, Argentina)

CACM -- Dec. 1960 at Managua, Nicaragua a General Treaty established a customs union between Guatemala, El Salvador, Nicaragua, Honduras, Costa Rica (joined July 1962). [Central American Common Market]

EEC -- Established pursuant to Treaty of Rome (signed 25 March 1957, entered into force 1 Jan. 1958), among France, Belgium, Netherlands, Luxembourg, Italy, W. Germany (U. K., Ireland, Denmark added), to eliminate internal trade barriers, introduce common external tariff, common agricultural policies, etc. [European Economic Community]

BENELUX. Economic union of Belgium, Netherlands and Luxembourg, formed 29 Oct. 1947.

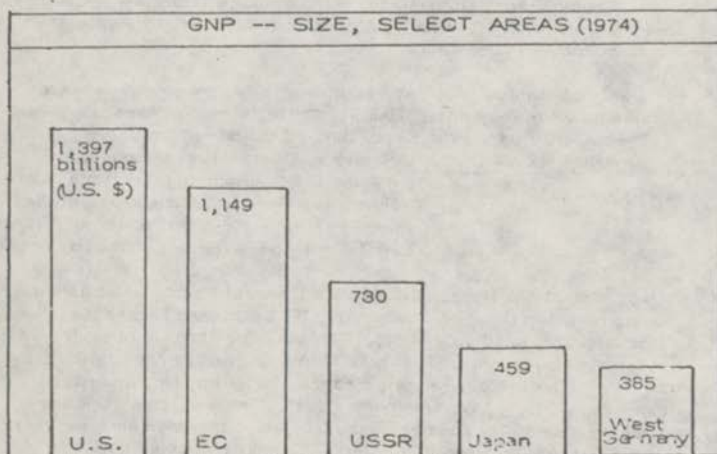
EFTA. Created pursuant to the Convention of Stockholm (20 Nov. 1959), including Austria, Britain, Denmark, Norway, Portugal, Sweden, Switzerland.

OPEC -- Organization of Petroleum Exporting Countries. Charter members: Iran, Iraq, Kuwait, Saudi Arabia, Venezuela; later members: Qatar (1961), Libya and Indonesia (1962), Abu Dhabi (1967), Algeria (1969), Nigeria (1971). (OPEC nations control some 73.3% of world proved oil reserves).

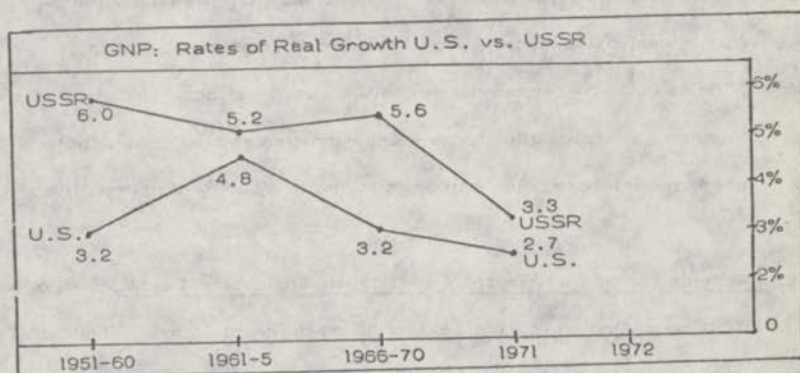
The contemporary international marketplace is being vastly transformed into an arena of titans. Increasingly, U.S. multinational corporations will have to be of sufficient size to compete against monolithic state economic enterprises of socialist and Communist countries, against the European cartels, "Japan, Inc.," and other government-run enterprises, as well as against the rapidly growing economic might of regional trading blocs.

Monolithic State Trading Authorities -- The Soviet Competitor.

Largest among the centralized state trading monopolies are Trade Ministries of the USSR. After decades of ideological and economic isolation, we lose sight of the fact that Russia is the second largest economic unit in the world.



USSR's GNP is approximately one-half as large as that of the U.S. More important is the fact that Russia's rate of real growth for the last several decades has bested the United States by a factor of two.



Soviet economic development and power is something to watch really carefully. A country with that kind of economic potential centralized into large state trading authorities describes a tremendous competitive force with which to contend.

The monolithic state trading authorities of the USSR secretly undertook to purchase huge amounts of U.S. grain from several U.S. family-held grain trading corporations; when the dust settled, Russia had imported (in 1972) more food than any other country in history — 28 million tons (16 million from the U.S.). Russian imports of wheat in 1972 equalled some 25% of the entire U.S. crop. In the process, the \$1.1 billion Russian grain deal of 1972 caused major market changes and added materially to doubling U.S. domestic wheat prices.

In times past, it used to be bulls and bears who cornered food futures markets and greedily drove up prices. In hindsight, we now recognize that state trading authorities and central directed market operations, such as represented by the Communist integrated economic system, regional trade blocs (European Economic Community), and the Japan, Inc.'s or OPEC consortia can have a similar effect. Under these circumstances, what is called for are enlargements and not contractions of U.S. economic might to hold on to or to maintain a parity of competitive scale.

Integrated Economic Power -- the "Japan, Inc.s" and Cartels. In other countries, concentrated economic power takes different forms. There's the integrated economic power approach -- the "Japan Inc.'s", for example. Integrated economic power in Japan includes groups like Mitsubishi Shoji with a \$14.2 billion volume (1971) and Mitsui Bussan with \$14 (1971) billion volume. These very large and well integrated units of power are the size of U.S. global competitors.

Critical Material Combines -- the OPEC Experience. Other difficult economic power blocs to cope with are "critical material combines," such as OPEC which generated estimated revenues of \$90 billion in 1974. Think of that, a half dozen Middle Eastern countries with a combined population of about 50 million -- less than 1% of the world population -- threw most of the world into chaos and economic turmoil. Controlling a lion's share of the world's known reserves, OPEC nations easily dominated world petroleum markets. But petroleum isn't the only resource we have to worry about.

World trade of many vital commodities -- grain, rice, sugar, copper, tin, nickel, lead, etc. -- frequently are dominated by about 3-4 major countries. So, the OPEC success could very well set off a domino effect. Potential combines for other resources makes this arena of competitive power loom ominously.

Central (State) Directed Economic Competitors. In central or state-directed economies, various state monopolies are among nationally concerted competitive centers that also must be dealt with directly. The scale of international global competition has reached new magnitudes.

Emergence and Growing Dominance of Regional Blocs. Perhaps more important a factor in international competition are the regional trading blocs. The proliferation of regional trading blocs substantially alters world trade patterns. The great success of the European Community, the increasing importance of the Latin American Free Trade Association, the Communist trade bloc, and other regional combines are to be contended with. Some of the more important regional blocs are indicated on the chart. It is the way the concentrated economic power is organized that is important. In the agricultural area, for example, the European Economic Community, now being expanded to include the European Free Trade Association members (and certain British Commonwealth countries that also are brought into the fold via trade preferences), constitutes a sphere of economic power that is enormous. The total GNP of the EEC substantially exceeds that of the USSR. (See earlier chart). Such regional trading blocs are establishing organizational frameworks to deal among themselves first -- "a nationalistic-regional-trading-bloc-first" approach. In the agricultural area, the so-called EEC Common

Agricultural Policy knits these countries closely together and results in disruption of established and traditional trade patterns. The U.S. can get shut out.

Multinational Corporations -- Competition on a Parity of Scale.

Multinational corporations, of course, are a part of this new titanic equation. Here it is important to keep in mind non-U.S. multinationals like Royal Dutch Shell with \$12 billion in sales (1971); Unilever with \$7.5 billion (1971); British Petroleum with \$5.2 billion (1971); and so forth. These are formidable foreign-based competitors.

There is a long term trend toward bigness in business as well as in all modern-day institutions. Institutions verge on taking over and all but displacing individual private ownership. The movement is toward larger blocs of power and fewer of them. Among the some 1 1/2 million U.S. corporations, the top 500 (.00033% of the total number) account for some 65% of all activity -- that trend has been intensifying and is likely to continue to do so.

Present U.S. business growth trends -- internally, through conglomerate acquisition and by multinational expansion -- will establish the international business powers of tomorrow. This period of new growth in the size and scale of business parallels the last burst of business enterprise expansion -- the vertical and horizontal merger movement at the turn of the century which established the multi-state, nationwide distribution organizations of this era. The difference is that the focus of the present growth is now taking place on a global scale. Yesterday's multi-state manufacturers are well on the way to becoming tomorrow's multinational global enterprises.

In a Sea of Giant Competitors Does Bigness Is Bad Concept Make Sense?

Bigness is the one overshadowing conclusion drawn from this analysis of the realities of global economic competitive forces abroad in the world today. Bigness, more than ever before, is essential to survival. This highlights and challenges the fallacy of current antitrust thinking in the Congress and the regulatory agencies. The fixation that "big is bad per se; let's break 'em up," is 180 degrees out of phase with the new realities of titanic global economic competition. A parity of scale among giants is indicated.

To sum it up, the lexicon of major issues describing the New Politics is young and yet to be fully defined. Key focal points include: environmentalism and a whole host of urban-related problems; the changing structure of business enterprise (particularly antitrust policy, international competition, and economic democratization.

Whatever the exact form, the new issue base upon which political parties will be dependent revolves around a "quality of life" theme. That's an abstract way of saying nothing more than "something better." The exact issues are yet to be pinpointed and fashioned into a new package which can bestir the public interest, captivate the spirit, and provide a new political direction for the nation.

Senator CULVER. Thank you very much, Mr. Molitor.

Our final witness today is Dr. Gar Alperovitz, codirector of the Exploratory Project for Economic Alternatives.

It is a pleasure to welcome you here.

STATEMENT OF GAR ALPEROVITZ, CODIRECTOR OF THE EXPLORATORY PROJECT FOR ECONOMIC ALTERNATIVES

Dr. ALPEROVITZ. Thank you. Rather than read from my prepared remarks, I think it may be useful simply since we have such short time to briefly and almost telegraphically give you kind of an overview of the sense of what we have been doing and what issues become highlighted and sharpened from the time the research project has been undertaken.

So at the very grave risk—and I beg your indulgence—of quick, short sentences, let me give you some highlights of what I think makes sense in terms of sharpening the debate.

In our judgment, we are in fact in the fourth quarter of a century entering an entirely new economic and resource era; that we who have lived through the last quarter of a century and assume the normality is prosperity and up are likely to find assumptions based on that experience wrong about the future. I particularly mean political assumptions.

One of the difficulties of computer modeling is what weight to give political futures and what weight to give them particularly in entirely new contexts. These are inherently matters of judgment.

You can base part of your work on extrapolations of the past. If it is a new context and a new ballgame, you can't quite do it without making political judgments of the kind we are all forced to make.

So I would personally like to not object but enter that caveat that the issue of broad judgment, of the kind the Congress or citizens make, is one of the inputs in the scenario we think about in the future that moves it—one of the critical inputs has moved from expertise to judgment—not entirely away.

The contention and the reason we think the coming period is entirely new can be summarized in terms of six key and fundamental factors we think are shifting and can only shift in ways that will produce political change in significant order.

Some of these have been touched on. Briefly speaking, unlike the last 25 years, the post-war period, indeed the United States is in many ways, particularly in manufacturing, relatively receding in its position in world trade relative to rebuilt Germany, Japan, and the socialist countries.

This has certain impacts. The most important one is felt by specific communities in which firms move out and away, losing jobs, or exports do not grow as fast as formerly; meaning that the job base of a specific community is undermined.

The second key factor has to do with, and that has been touched on, the growing power of Third World countries. Although it is very difficult to predict cartels, our judgment is that in the upswings over the coming period, the resource needs of such nations and the political possibility of them organizing when there is a shortage mean that the trend can only be upward in terms of their capacity to cause us problems.

It is very difficult to go beyond that at this time. But over a 25-year span, our judgment is that there will be dislocations caused by the capacity—perhaps in bauxite, maybe in manganese, and perhaps again in oil for certain—that could cause dislocations and inflation at home because of their political power.

Again, the problems that we have just gone through and are still in of high unemployment and high inflation are likely to be the kind of rule that we will see during the coming period.

The third one is obviously resource limits. I will leave that with one or two sentences.

The impact from the point of view of political management of economic issues is likely to be first and foremost inflationary, and that raises the question of whether politically we can manage problems of unemployment in high inflationary contexts.

Our judgment is that it is very unlikely that we will attain this capacity easily, so that again the judgment of dislocations, unemployment, and inflation and political institutions unable to manage transitions is the most likely dominant theme—again briefly and in an oversimplified form.

The fourth key factor is role and scale of Government itself. U.S. Government expenditures have risen roughly 22 percent in the last quarters in the order of magnitude of 30 to 35 percent GNP, and up in the range of 40 to 50 percent by the end of the century. There is much debate about where in that range. But the key point is although people will criticize Government expenditures, they will grow, and they are likely to add to inflationary problems and exacerbate the political institutional mechanisms that are trying to manage employment and economy in general.

Again the conclusion is unlike the last 25 years, that is the exogenous factor that will make for more difficulty in managing these planning and resource and economic problems.

The fifth one, which has been touched on—but I was surprised not to hear more said about it—has to do with the role of capital and capital shortages.

In our judgment the capital crisis is real, given the assumptions one makes about the capacity of the economy to grow at certain rates. That is primarily a political assumption.

It would theoretically be possible to reduce the capital shortage problem by significant increases in the rate of growth. But the question there has to do again with the political judgments you make about the power of Government to stabilize inflation and employment and achieve higher rates of growth sufficient to develop adequate capital.

If you add all of these together and throw in one final factor, the one that has been critically assessed, for instance, by the Office of Management and Budget, the secondary slowing in it and growth of U.S. productivity, the picture that comes out in the scenario is that productivity has not grown as fast as it has grown.

Again what you are likely to get is reduced growth rates, greater economic dislocation, inflation, and unemployment as the rule.

There will be upturns. In our view they will be shallow and they will lead to great claims that we are returning to normality. But in fact they are likely to lead only to renewed periods of stagnation.

That is a critical and over-simplified observation we make. In our judgment it is likely to raise political issues and institutional issues

of a kind that have not been common in this country and a kind slightly different from those raised by the previous witness.

The question is whether in periods of high unemployment and inflation as a longer-term phenomena—and let me sharpen it by saying what I am really saying is the fourth quarter of the century is likely to be more like the first and second quarters than the third; that 1950 to 1975 is the odd man out in the century, in our opinion.

It is the only quarter where prosperity was the rule, despite all the problems. So the first quarters, to say nothing of the Great Depression, are likely to be more like the period we are entering than the one we have ended.

What we think that spells is political polarization, which has not been touched on very much, although I think it underlies some of the previous comments.

We think there is in the near term, beyond the possibility of a short and temporary economic upturn, likely to be political unrest, not only in black communities but we think in white working class communities, that this can lead easily to violence and repression, and that political problems of polarization left-right that have in fact emerged in other advanced industrialized nations, are likely to be the sort of future politics we begin to see.

If you want to put it in other terms, the period of the populist progressive era at the beginning of the century in which 20-year-long cycles of broad reform, broad political ideological reform and debate, as opposed to sectoral issues—such as environment, women's questions, employment or jobs—the broad sense that something fundamental has to shift, we think that is likely to be the keynote of the kind of debate of left and right that goes on for much of the rest of the century.

If that is realistic—and again I am oversimplifying. The kinds of issues that get spotlighted very quickly are some that have been discussed here, but some that have not been discussed here at all.

One of the key questions is clearly is there a way to do planning that can resolve some of these questions. The answer is maybe, maybe not.

In our judgment, planning is inevitable. But that term is a broad term which covers a very great host of possibilities.

In the near term I think we are likely to see extensions of the kind of planning that has been common, for instance, in one form or another, in France and Japan. That is projection planning based on the close linkage of large government institutions and the large corporations. That is planning, or, if you want to use the term, corporate planning.

Its priorities are: (1) Growth; (2) stimulation of corporation activity in order to deal with unemployment; (3) weight; and (4) high centralization.

One of the really important points to note is that the planning experience we have had and what makes it very difficult to forecast in any adequate way, based on the past, has been in the period of relative growth in all of the industrialized countries, the postwar period.

The fact is we are entering a period of relative slowdown in growth, I believe. This means that strains placed on the planning system are enormous.

On the one hand, if you can grow your way out of conflict out of resources, you have a rather easy road to hold. If you don't have that

option, if the historic kind of escape valve of the democracy and rapidly increasing growth is not available, what you get is intense conflict over resources, unlike the planning in industrial countries to date, both between and within sectors.

So that one corporation's needs and interests are fought out against another corporation.

To bring that right home to anyone dealing with political realities and constituencies in the country right now, we have been having planning in this country. The kind of planning we have had has produced the massive unemployment we have had recently.

The sectoral conflict most highly experienced in terms of business institutions is between the large corporation and the small businessman. Anybody who has been in touch with the small businessmen knows on the one hand they are being badly hurt by the recession and even more badly hurt in the capacity—until recently—to have capital.

So the decision as to who gets capital resources means the destruction of small business under current planning systems. That is the kind I think that is likely in the future—small business being very badly hurt by the kind of planning system we will get in the near term and some particular business institutions of a larger order also hurt.

Let me sharpen that a little further. I would say the key issue that has not been discussed here, which I think cannot be avoided, has to do with the central role of the large corporation in the modern era as we go down the period to and through the end of the century.

There have been several polls which have demonstrated that the public is very much aware that that power institution—Fortune 500, if you like—is the critical mass in many political debates, in many political and economic issues.

That is, two-thirds of a recent Peter Harris poll show two-thirds of the public showed both the Democratic and Republican Parties in their judgment were dominated by big business. That is 67 percent.

Sixty-six percent thought Federal Government was dominated by large corporate institutions. Another 58 percent thought a political movement—58 percent, which struck me as big—thought a political movement, with the goal of changing the power role and reducing the power of the large corporation, was something they would support.

Two-thirds of the public in this poll though employee ownership of a large corporation, two-thirds, was something they would support. Roughly 44 percent, a majority of those expressing a view, favored public ownership even of natural resources.

The Senate vote on breaking up the large oil corporations, I think, indicates some of the underlying sentiment that people, Representatives, and Senators are picking up.

I would sharpen it this way: What has happened in the advanced industrialized countries we have looked at over recent years is there has been a renewal of political interest in nationalization and takeover of the big organizations.

The British Labor Party that was dead for 20 years after the war except for marginal issues, and so too in France and the Italian case, was marginal. In all of those countries there has been a renewal of sufficient political power to make programs aimed at nationalization realistic in the political arena because of economic difficulties.

I wouldn't want to put too much weight on that because of current difficulties in all of those countries. They are likely to have a big tug

of war back and forth on the issue of how to manage the economy, how to achieve incentives. Everyone is very embattled.

The point to make is as the economic difficulties become greater, there is no way to avoid the central role of the corporation and whether or not there are alternatives to it.

In our own context, I would say that as we go deeper down the century and as resource issues become more intense, there are two or three or even four questions that have to be faced which also sharpen this issue in the planning sense.

The first is quite simple, and almost in a way that seems so obvious one hardly mentions it except no one discusses it, the internal dynamic of the for-profit corporation must be to grow. It has to sell. It has to spend some \$31 billion this year on advertising in order to convince people to consume more.

That logic which rests in the need to increase sales, increase profit and raise capital, cannot be denied. That central logic is in fact directly opposed to central logic needed to restrict and redirect growth, which may be adverse to the large corporation.

I think there will be no way to avoid the factual alternatives to the large corporation. Simply for growth, restricting, or programming, or channeling reason will have to be debated over the rest of the century.

Second, a corporation's need to make its balance sheet come out right very often means that its interests are different from the interest of specific geographic communities and specific worker groups and specific small businessmen in a community who depend upon having a solid economy in that town.

So, for instance, if a corporation for very good reasons decides that it is better to move to Hong Kong, it does not have within its internal logic any reason to consider the fact that the city it left makes up for severe unemployment, may find social problems of a high order dumped on the community, may increase the tax problems of the taxpayers in that community. Or, to put it conversely, only if there were secure jobs in specific communities could you find a way to couple the interests of the large economic activity with the small.

To give you some idea of what I am talking about, the Alfa Romeo concern in Italy, by public directive and public policy, placed 20,000 jobs in parts of southern Italy in order to stir public priority to stabilize jobs in specific communities.

We think that kind of question is likely to become increasingly important as specific cities find themselves impacted by the economic and resource crises of the rest of the century.

A third key question and one I am particularly concerned with has to do with whether there is any way to get participatory or democratic or decentralized plans. If communities are eroded, if people have no security in their own community, if they have very little reason to expect they and their children will stay there, it is very difficult for local citizens to be involved, to care about planning in any serious way.

They may not be there. Their children are likely to move out. The economic base of the specific geographic area is not sufficiently stable to underpin people's interest in the planning kinds of questions of a long-term nature.

If that is reality, there is very little hope for participatory or democratic planning, unless public policy is able as a matter of priority to stabilize people's localities so they can stay there and be there and have a vested interest in the future of their own community.

If that is absent, schemes for participation and planning are likely to be ill-found and likely not to have public participation in any way that is meaningful, except for kind of superficial ways.

That forces again very difficult issues about how can public policy guarantee jobs in specific towns in order to undercurrent the democratic and decentralized planning process.

The final way in which the issue of the large corporation is focused, in my judgment, has to do with the capital crisis. If you project reduced rates of growth, which are realized I think for the reasons I outlined, then the capital has to come from someone.

Now, the capital can come either from high pricing, through Government loans as in the Lockheed loan, or the recent proposals for new RFC lending authorities at the Federal level, or it can be reduced work salary and wages.

Any way you look at it it has to come out of consumption in one form or another. So the conflict between people's real standard of living and the needs of a large corporation for capital is likely to be intensified over the coming period.

That is another reason I believe that question will be focused and sharpened.

In sum, I agree entirely that the question of participation will be an important one over the coming period, but that the questions of planning, internal management of the corporation, community participation in resource issues of a long-term nature, all hinge on whether alternatives to the large corporation can in effect be debated and developed so that the institutional underpinning of resource, planning, and decisionmaking is in fact shifted in a way that citizens have a role to make some decisions about their own future.

Probably in the comment period I would like to go into some of the ways in which simple goals like inflation control for the family budget, and job security and community resource allocations can be mediated through planning institutions.

Enough has been said to highlight what I think are some of the key issues.

[Mr. Alperovitz' prepared statement and an article supplied for the record follows:]

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Statement by Dr. Gar Alperovitz, Co-Director of the Exploratory Project for Economic Alternatives, before the Panel on Environmental Science and Technology, U. S. Senate Public Works Committee.

* * * *

General

Unless the way our economy is organized changes fundamentally, the prospects for the next decade and beyond are grim. It seems clear that full employment will not be achieved, inflation will continue, and politically inspired as well as real shortages of raw materials will slowly restrict our standard of living. If there should be upswings they are likely to short-lived and shallow. As a result, in all probability social and political discontent will accelerate. Expectations of good jobs, decent housing, a college education, and a secure old age will become harder and harder to fulfill. The tendencies of urbanized society toward crime and disaffection will intensify as people feel their lives slipping further and further behind their aspirations. Violence bred of despair could easily bring repression and political demagoguery.

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ON PLANNING IN GENERAL

The United States is well on the way to a planned economy in any event. During the next decade, questions of economic growth, income distribution, price and employment levels, and the use of scarce natural resources will become more and more subject to explicit political decisions....

ON THE DANGER OF 'CORPORATE PLANNING'

As the Nobel Prize winning economist, Wassily Leontief, has observed, however, planning will come "not because some wild radicals demand it, but because businessmen will demand it to keep the system from sputtering to a halt." It is true that only the most sophisticated businessmen and financiers, like Henry Ford II, J. Irwin Miller, Chairman of Cummins Engine Co. and Felix Rohatyn of Lazard Freres, now openly advocate planning. However, experience in France, Germany, and other European countries where businessmen overcame their initial skepticism and became strong supporters of planning suggests that Leontief's prediction is likely to be borne out...

But given the corporate sector's influence on government, their proposals are all but certain to result in more government power being used to support the plans of big business. Furthermore, as the economic crisis continues, attempts at economic planning are likely to lower the living standards of many citizens, or at least slow the rate of increase well below expectations.

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Proposals such as Rohatyn's RFC and the brazen Ford-Rockefeller proposal for a \$100 billion Energy Corporation are but the first explicit statements that American business will soon need to institutionalize a whole new generation of subsidies from the public treasury. They follow on the Lockheed loan in this country and, for instance, Britain's recent massive bailout of the Chrysler Corporation. In their broad impact they are designed to meet the need, as First Pennsylvania Bank's Chairman John R. Bunting recently stated, "to transfer resources...from the consumer sector to the producer sector of our economy...." It is for this fundamental reason that despite even the best intentions of its labor supporters corporate-oriented planning must ultimately be opposed to the interests of the American worker--either as consumer, taxpayer, or both. Furthermore, if and when wage and price controls are reinstated, they will have the likely effect--as a Nixon Administration official put it--of "zapping labor."

There are other problems with corporate-oriented planning: subsidizing business investments in industries where there is already excess productive capacity--and when the fundamental economic problem of income maldistribution hobbles consumer demand--will waste precious capital resources still further. And planning dominated by business concerns will worsen the environmental crisis by, for example, weakening air and water pollution standards, reducing restrictions on strip mining, and generally increasing incentives to speed corporate exploitation of scarce resources--from energy and minerals to such basics as land and water. The modern corporation's inherent need is to expand its capital base and to expand its output. Environmental controls are an unwelcome constraint on these

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growth objectives.

Implicit in the development of business-oriented planning would also be a tightening collusion between corporate and government bureaucracies. It is no exaggeration to say this could lead to at least some of the elements of a potential American version of the corporate state.

ON DEMOCRATIC PLANNING, PARTICIPATION AND DECENTRALIZATION

Over the coming decade, the economy can be planned for full employment, stable prices, and conservation of natural resources--or it can be planned for continued inflationary growth and a more unjust distribution of income and wealth. The next years will see a clear tendency toward increasing concentration of economic power in the hands of public and private bureaucracies. We may not like it, but we must face it: otherwise we will not be able to deal with its consequences.

As we move deeper into a planned economy, it is imperative that we begin to widen participation in the process of planning itself. Fortunately, we do not have to start from scratch. We have behind us some ten years of experience with various attempts at citizen participation and community planning--whether in urban renewal and antipoverty programs or in such efforts as the campaigns to stop throughways from ruining cities.

If there were a national commitment to make jobs secure and to allocate capital more fairly--to stabilize the economic context of local community planning--community participation would have much more point and appeal; citizens might have the security they need to make a commitment to their own locality.

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Community plans for population growth, jobs, housing, transportation could, and should, be the basis upon which national resources are allocated. What is needed now is that local community planning enter a new phase. Direct assistance should be given to enable citizens in neighborhoods and towns and states to engage in serious deliberations about what they want their town or neighborhood to look like. So long as we do not undertake the effort to build a local capacity for citizen planning, the planning we get must inevitably be by centralized bureaucracies.

Hawaii, Washington, and Iowa have also begun to involve thousands of citizens in state planning for the next twenty-five years. In Iowa, a serious attempt to encourage citizens to discuss plans for the state over the coming quarter century was instituted by "Iowa 2000". Although the effort was, obviously, an initial experiment, nevertheless, 47,000 people participated in meetings and discussions held throughout the state.

A democratically determined national plan should ultimately be based on integrated and carefully balanced consideration of the plans of thousands of communities and neighborhoods in America--not on the politically balanced views of a presidential staff and a few powerful Congressional chairmen.

ON THE NECESSITY OF ECONOMIC SECURITY FOR DEMOCRATIC PLANNING

A public guarantee of employment and the rational planning of jobs generated by public investment would have several results. First, people would be less afraid of change. Defense workers would fear cuts in the

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military budget less if they knew other jobs were waiting. Competition between workers--whites and blacks, and men and women--would be reduced. Business would be less able to work up opposition among workers to environmental restrictions on industry. And it would help overcome resistance to labor-saving innovations that retards progress in many industries.

Secondly, fundamental job security could reduce the waste and community dislocation associated with changing market conditions, employment prospects, national economic failings or, for instance, corporate decisions to locate in other countries. Such guarantees would not end migration, but they would reduce a substantial portion of the migration within and between areas by people in search of jobs. For example, if some of the smaller cities, especially those in the South, had been able to offer permanent work to all, this might have eliminated much of the current economic burden in New York City. During the last two decades the immigration of job seekers has swelled welfare costs. At the same time the national economic mismanagement has enormously intensified local problems in general. And were we able to deal with the fundamental distortions of urban life caused by unemployment and migration, then we would also expect that welfare mothers and city employees would no longer be such reliable scapegoats for opportunistic politicians.

Moreover, planning for full employment in communities would help to create a more dependable tax base. States and localities would not be forced into what is often ruinous competition with one another to attract industry: and the bargaining between corporations and cities would be on much more equal terms.

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ON MOVING BEYOND THE CORPORATE GROWTH PRINCIPLE

In general, the modern corporation itself, with its tendency to unrestricted growth, is in the long run incompatible with an economy that will have a lower rate of growth and a lower rate of exploitation of resources than we have known in the past. The modern corporation must expand sales, hence foster consumption rather than conservation--a dynamic which is ultimately at odds with the growing resource constraints. For this reason, in order to plan for more secure employment, and to undercut the expansionist tendencies which have often led to American interventions abroad, the giant corporations now at the core of the economy must gradually be transformed or replaced.

But once we face the facts of limited resources, we will have to reconsider many deeply ingrained American habits and practices, among them the mass advertising that is the principal stimulant of consumer appetites. It seems unlikely that the incessant psychological pressure on American consumers to buy more and more is compatible with the long-term need to conserve resources and to evolve ways of living that will protect the environment. How advertising can be controlled without impairing constitutional freedoms should be a central question of the next twenty-five years.

The answer lies in conceiving new economic institutions that could undertake the long-term planning to protect national resources which private corporations cannot. As the Americans who responded to the Hart poll recognized, and as just about every Western industrialized nation has concluded, this will also require public ownership. The Stevenson-Magnuson Bill, which calls for a publicly owned oil and gas corporation

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to develop reserves on public land (where most US reserves are) is a reasonable first step in this direction. That eight Senators have endorsed this bill again suggests that it is politically possible not merely to discuss new kinds of ownership but eventually, perhaps, to do something about them.

At the local level there is need to build on the numerous activities at local resource conservation and the development of small scale, ecologically efficient technologies. Much genuine innovation in recycling and the use of solar and wind power is coming from the growing network of individuals and grassroot organizations trying to find ways in which they can live a more environmentally rational life. Their willingness to share information and work cooperatively suggests values that will become more important in the resource depleted future. Linked to local community protest organizing against utility rate structures that encourage waste, against nonreturnable containers, against carelessly planned nuclear power and oil exploration programs and the like, this emerging network of people could become an important part of a new political movement to which they could bring the direct experience of cooperation, participation and conservation.

ON DECENTRALIZED PUBLIC OWNERSHIP AND NEW ECONOMIC INSTITUTIONS

But a serious jobs program will obviously ultimately involve a substantial increase in public control of industry--and it is at this point that the need to be clear about taking first steps towards restructuring the economy must be faced. What is required is not only planning and public money, but above all the power to coordinate different elements of the economy--for example the need for a better rail system and the

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need to give specific assurances to specific workers in specific communities that they will have jobs.

Recent European experience suggests that to achieve such a result without establishing a civilian version of the military-industrial complex-where the interests of private contractors dominate a compliant bureaucracy-will ultimately require direct public ownership of some of the most important American industries and services. The publicly owned Alfa Romeo Corporation, for instance, has, as a matter of policy directly placed thousands of jobs in specific distressed areas of Southern Italy.

The Western world is full of fully or partially owned government corporations, like Renault, Air Canada, Swiss Air, SAS, Finsider in Italy, Banc Nacional de Paris, which are rarely entered as evidence. In an exhaustive comparison between three public and private enterprises in Great Britain since World War II, economist Richard Pryke found that productivity in the nationalized manufacturing industries rose 3.4% per annum between 1948 and 1968, compared with a 2.5% per annum growth in the private manufacturing sector.

One area in the United States' economy where rough comparisons between private and public enterprise can be drawn is among electric utilities. Although there are differences in location and technology, evidence from the more than 2,000 publicly owned electric utilities shows that they tend to be somewhat more efficient than private utilities. And because their books are always open and they are more subject to scrutiny they are also more accountable.

Once the possibility of new forms of public ownership is admitted, a number of variations are possible which would encourage decentralization and economic competition. For example, large shares of ownership

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could be sold to employees who could also take on larger responsibilities for management--a practice widespread in Europe. Since 1973 large Swedish companies have been required to include workers on their board of directors. A few Swedish firms, like Volvo and Granges AB, have gone further, successfully instituting a considerable degree of industrial democracy. In Germany workers elect one-third of the membership of a supervisory board of directors of all large corporations. Shareholders elect the other two-thirds.

In our view, the community or communities where the plants are located should also participate in new ownership arrangements through "joint ventures" involving national and local governments, and employees. Again, there are some partial precedents in Europe, for example, 40% of the stock in Volkswagen is owned by the government (20% by the federal government and 20% by the state of Lower Saxony in which the factory is located). Such joint ventures might be especially sensible in industries that depend on government contracts and that--like transportation, defense, and energy--are crucial to long-range planning.

That novel ideas are by no means beyond political debate is further suggested by Senator Kennedy's recent bill which would divest large auto producers of their mass-transit producing facilities if they are in substantial conflict with their auto producing interests. His legislation would establish a national public trust which could own the subsidiary for up to ten years, and which would be administered by the Ground Transport Reorganization Office in the Office of the President. This basic notion could be broadened for long term planning by giving the trust

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authority the power to participate in planning for the decentralization of population that is so essential to the future of both urban and rural America. It could also provide that a substantial share of ownership of the resulting corporation also be in the hands of an employee and local community trust.

Exploratory Project for Economic Alternatives

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A NEW ECONOMIC DIRECTION

by

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and

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Editor's Note

The following article is an extended version of a position paper debated at the National Democratic Issues Convention held in Louisville, Kentucky, November 21-23, 1975, and circulated to several other partisan and nonpartisan groups. The paper was adapted from a report being prepared for a group of 28 foundations and individual philanthropists by the Exploratory Project for Economic Alternatives in Washington, D. C. The report, which contains an analysis of economic and political trends for the coming 25 year period, argues that the United States is at the end of an economic era that began with World War II. What is required over the coming decade, say the authors, is a sweeping reorganization of the major corporate and government institutions that dominate the economy in order to produce economic security and economic democracy.

Unless the way our economy is organized changes fundamentally, the prospects for the next decade and beyond are grim. It seems clear that full employment will not be achieved, inflation will continue, and politically inspired as well as real shortages of raw materials will slowly restrict our standard of living. If there should be upswings they are likely to be short-lived and shallow. As a result, in all probability social and political discontent will accelerate. Expectations of good jobs, decent housing, a college education, and a secure old age will become harder and harder to fulfill. The tendencies of urbanized society toward crime and disaffection will intensify as people feel their lives slipping further and further behind their aspirations. Violence bred of despair could easily bring repression and political demagoguery.

Our problems cannot be solved simply by substituting Democrats for Republicans or vice versa. Political parties out of power, of course, usually benefit from bad times at first. But once in power failing to muster the courage to address problems directly and quickly, they are likely to be out on the street, while the steady rise in voter apathy and the number of voters who consider themselves independent of either party continue.

The problems of the political economy, systemic and intertwined, form a maze of policy traps. Currently most American economists--liberal and conservative--agree that, unfortunately, the remedy for

inflation is severe unemployment, and the remedy for unemployment is inflation. Our economic system demands that scarcity of resources be cured by high prices—as in the recent case of energy prices—which in turn cause dislocations and unemployment. Economic doctoring has become a matter of choosing your poison.

As one looks ahead it becomes clear that what one political observer has called the "Politics of Instant Gratification" will not do. The quick answers that we have come to expect in an economy dominated by concentrations of private economic power are, of course, being tried first: the rhetorical flogging of people on welfare and the "profligate" big cities. Demands that government spending be drastically reduced are coupled with pleas that business corporations be further subsidized by new and bigger "incentives" to invest. The Ford Administration attempts to cut the budget for food stamps at the same time it urges government supported loans and higher prices for the oil industry, and more tax breaks for the corporate sector in general.

There are some political crops to be harvested here in the short run. Not only have conservatives historically worked this ground, but now some "liberal conservatives" are being tempted as well: witness the current attempts of such governors as Brown of California and Dukakis of Massachusetts to match conservatives in efforts to cut back government programs. But quick political solutions won't work—at least not for long: cutting government spending increases unemployment; this in turn increases social unrest, which supplies ammunition for real conservative politicians (who will always win the shouting match about "crime in the streets").

The attempt to move right promises to split both parties but, over time, most fundamentally, the Democrats. When domestic programs were cut back to finance the Vietnam war, the victims were both the poor and the minorities. Then, with the recession-depression, working-class white males suddenly found themselves forced to compete with women, blacks, and other minorities for jobs in short supply. Now not only are auto workers and steel workers and laundry operators in trouble, but firemen, policemen, and teachers as well. Canceling social programs increasingly affects not only the poor and working class, but the middle class as well.

These victims of the economic crisis are now politically divided. The old antagonisms--particularly over race--do not fade away with the first, temporary rise in the employment rate. Moreover, the public dialogue on economics is still clogged with the vague hope that somehow the boom will be patched up again. Finally, as we know, America is a politically conservative country--and, over the short run, politicians like Reagan and Wallace are in the forefront of much concern.

As we look beyond the joggling for position of an election year, however, it is important to recognize that as the burdens of the new economic era continue, possibilities of the steady evolution of a serious American politics around issues of economic restructuring cannot be discounted. In other advanced capitalist nations, the disintegration of the Post World War II boom has resulted in a slow but persistent strengthening of groups which aim at restructuring--often unnoticed for long periods as conservative-oriented politics dominated the media. In

France and Italy, Socialist and Communist parties are hovering around significant power; in Japan the strength of the Left has steadily grown in recent years. In Great Britain, a major part of the Labor Party, relatively quiet and disorganized during the 1960s, is now pressing for significant steps toward Socialism as an alternative to the hapless drift of the British economy under welfare capitalism.

Closer to home, and largely ignored by the American media, a strong Socialist movement has developed in Canadian politics. The New Democratic Party--a successor to the Agrarian Socialists of the 1930s and 40s--controls two Western provinces and is now the official opposition to the Liberals in the Province of Ontario.¹

The economic failings which have established the context for such political shifts abroad are hitting an America with little in the way of a socialist tradition. Those in both parties who have relied on economic growth to resolve social inequities, are now programmatically and ideologically adrift. Moreover, at least some of the issues that face us--such as resource scarcities, environmental degradation--have no clear solution in any tradition. If a broad-based progressive alternative to the current drift--with its obvious grave potential of a true Rightist politics--were ever to develop here, it would have to

1. The NDP last month lost control of a third province, British Columbia--where it had squeaked to a plurality win in the four party Parliament of 1972. Their loss, however, was a result of Liberal and Conservative parties throwing their support to the right-wing Social Credit Party. The vote for the socialist NDP actually rose from 39 to 40%.

break new ground. Its program would have to reconcile the need for planning with the opposition to Big Government and the need for decentralization; the requirement of economic justice with the need for resource conservation. It would have carefully to piece together a new alliance of the disparate groups in the growing population of America's economic victims, and, over time, it would soberly have to substitute a sense of positive energy and meaning for the weary apathy and negative cynicism which now dominates American politics. Above all its program would have to be practical.

Beyond Instant Political Gratifications

Despite the lack of serious popular debate on economic reform, and despite the conservatism of the American press, large numbers of Americans seem aware that fundamental issues are not being faced. Throughout 1975, while the media focused on the conservative side of popular discontent, such leading public opinion experts as Louis Harris, Patrick Caddell, and Peter Hart reported that the public was distrustful of the current economic system and open to proposals for fundamental changes in it.

A recent Hart poll demonstrated the point with impressive new data showing that a majority (58-25 percent) of the American people think that America's major corporations tend to dominate and determine the actions of public officials in Washington-rather than the reverse. The poll showed that a majority (57-35 percent) of the public also felt

that both the Democratic and Republican parties were in favor of big business rather than the average worker. A smaller majority of those expressing a view (49-45 percent) felt that big business was the source of most of what is wrong with the country. A larger majority (66-25 percent) favored employee ownership and control of large corporations, and a plurality (44-42 percent) even favored direct public ownership of natural resources.

Many polls have, of course, demonstrated public disaffection with government spending and the designation "liberal". The Hart and other more recent polls do not mean that most Americans have radical views. They suggest only a widening recognition that the economic system is not working, that it is time for some large changes. They also suggest that the political parties are considerably behind the people--as we might also suspect from the rising numbers of citizens who fail to vote. Joseph Califano, former aide to Lyndon Johnson, has described the reality:

While the people seek purpose in their lives and their society, the Congress and Executive, and the Mayors and Governors, offer a crisis-oriented instant political pragmatism. While men worry about their ability to provide food and shelter for their families, their political leaders still speak in the rhetoric of an economy of plenty. While our society is still plagued by a distorted distribution of wealth, the House Ways and Means Committee dots the "i"s and crosses the "t"s of tax reform.¹

Poll data also suggest that a growing proportion of the public recognizes that solutions to our economic crisis will not be found in "instant

1. Joseph Califano, "The Democratic Future," Democratic Review, Number 3, April/May, 1975, p. 14.

political pragmatism": 41 percent of the public in the Hart poll were in favor of "making a major adjustment in our economy to try things which have not been tried before . . ." (37 percent favored "making minor adjustments to correct for current problems," and 17 percent felt that the economic system ought to be "kept as it is, allowing it to straighten itself out"). A plurality of those expressing a view (49-39 percent) felt that it would do "more good than harm" to "develop a new political movement to challenge the influence of big business." And a solid majority (56-26 percent) said they would "probably support" or "definitely support" a presidential candidate who favored employee ownership and control of US companies. In some ways the period we are entering is reminiscent of the early days of the Vietnam war, when virtually every major power institution of this society--including the Presidency, the Department of Defense, the Congress and the major corporations, unions and media centers--were united in favor of the war. To speak of American withdrawal was impossible for most politicians--until Eugene McCarthy's campaign mobilized latent public sentiment in favor of it. The lead time between latent public discontent and the manifestation of sufficient political power to reverse the commitment of the power institutions in the Vietnam war instance was several years. But now, having been through Watergate and the Sixties, people no longer trust official political platitudes--and on economic issues the polls show a wide degree of public dissatisfaction already forming in advance of political leadership. Economic issues are inherently more intractable

and complicated than was the war, and polls must be used with caution. Not only can public opinion often be volatile, as when Ford's popularity rose after the Mayaguez incident, but we should also know by now that the power of political leaders may grow while their popularity declines; that the public may be cynical or apathetic toward political authority while still remaining submissive to it.

Still, the trends being picked up by the polls cannot be ignored. All indications are that disenchantment with society is more than an ephemeral opinion picked up from the evening television news. It appears to reflect something much deeper, and, as pollster Pat Caddell has repeatedly stressed, a complicated--not a simple-minded--attitude towards government: although people seem to have little faith in existing political institutions, it is clear that they expect changes to occur through the power and influence of government. Nowhere do the polls suggest strong sentiment that America's economic problems can be solved if we leave it to business.

The Inevitability of Planning

Since the 1970s began it has been useful for politicians to speak of "lowering expectations." To some degree this has been an important antidote to the overblown and underfinanced "great society" bureaucracy of the previous decade. But it is also a way of avoiding responsibility for the economic mess in which we find ourselves.

Try as they might, however, politicians cannot wholly escape this responsibility. The voters will not let them, nor will the economy

itself. The United States is well on the way to a planned economy in any event. During the next decade, questions of economic growth, income distribution, price and employment levels, and the use of scarce natural resources will become more and more subject to explicit political decisions.

Much of the economy, of course, is already planned by large corporations, banks, and their allies in government. Estimates have been made that up to one-half of US economic output is produced in industries where market power is so concentrated that prices and output are determined primarily by corporate plans rather than short-run supply and demand factors. John Kenneth Galbraith estimates that about 50% of the nation's output is accounted for by a planning system made up of no more than the top 2000 firms.¹ In manufacturing, the concentration of power is even greater. Studies by John Blair show that in 1947 the largest 200 firms controlled 47% of the assets of all firms. By 1968 they controlled 60%.² Willard Mueller reports: "By this measure (total assets of firms engaged in manufacturing), the share held by the top one hundred companies rose from 39.3 percent to 49.3 percent.... In other words, by 1968 the top one hundred companies held a greater share than that held by the top 200 in 1947."³ Hunt and Sherman estimate

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1. John Kenneth Galbraith, Presidential Address, American Economic Association, 1972, in The American Economic Review, March 1973, p. 4.
 2. John M. Blair, Economic Concentration: Structure, Behavior and Public Policy, New York, Harcourt Brace Javonovich, Inc., 1972, p. v.
 3. Willard F. Mueller, Monopoly and Competition, New York, Random House, 1970, p. 26.

that of the 13,775 banks in America in 1968 the 14 largest held 25% of all deposits. The top 100 held 46%.¹

The myth that we are living in a free market economy where the prices of steel, sugar, and insurance policies are set mainly by the interplay of supply and demand has little relation to reality. Examples of corporate planning range from the setting of gasoline prices by the oil companies to the "redlining" of neighborhoods as ineligible for mortgages by big city banks.

As the current economic crisis continues, we will hear increasing demands for more explicit planning by public authorities, not only in controlling wages and prices, but in deciding which industries, cities, and services will, or will not, be supported by the government. American labor leaders like Leonard Woodcock are strongly urging planning, to achieve sufficient government intervention to maintain high rates of economic growth. Legislation providing for the establishment of an Economic Planning Board in the Office of the President, Congressional review and approval of all proposed plans has been introduced by such Senators as Humphrey and Javits.

As the Nobel Prize winning economist, Wassily Leontief, has observed, however, planning will come "not because some wild radicals demand it, but because businessmen will demand it to keep the system from sputtering to a halt." It is true that only the most sophisticated businessmen and

4. E. K. Hunt and Howard J. Sherman, Economics: An Introduction to Traditional And Radical Views, New York, Harper & Row, Publishers, 1972, p. 269.

financiers, like Henry Ford II, J. Irwin Miller, Chairman of Cummins Engine Co. and Felix Rohatyn of Lazard Freres, now openly advocate planning. However, experience in France, Germany, and other European countries where businessmen overcame their initial skepticism and became strong supporters of planning suggests that Leontief's prediction is likely to be borne out.

Rohatyn, arguing for a new Reconstruction Finance Corporation to provide a channel for government investment in large corporations, has stated:

There can be no denying that such an organization... can be perceived as a first step toward state planning of the economy. Yet the time may have come for a public debate on this subject.... What many will call state planning would, to the average family, be no more than prudent budgeting.... There are many who believe that long-range economic planning at the Federal level will become a necessity.... The RFC could be one of the key instruments in this kind of approach.¹

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1. "A New R.F.C. Is Proposed for Business," The New York Times, December 1, 1974.

Another businessman, J. Irwin Miller, Chairman of Cummins Engine Co., has stated:

Business needs economic stability if it is to flourish and serve. Yet economic instability appears to be the only realistic prediction for the decade ahead, if we continue as at present.

....

...planning is now a necessary and vital tool for the accomplishment of any long-term economic objectives public or private. The U.S. government should, in the extraordinarily difficult days which appear to lie ahead, avail itself of every useful aid for making wise and farsighted decisions.

(Statement for Initiative Committee for National Economic Planning, May 12, 1975.)

Men like Rohatyn may see themselves as having the public interest at heart. But given the corporate sector's influence on government, their proposals are all but certain to result in more government power being used to support the plans of big business. Furthermore, as the economic crisis continues, attempts at economic planning are likely to lower the living standards of many citizens, or at least slow the rate of increase well below expectations. Corporations, heavily in debt, and facing declining profits and reduced cash flow, are already issuing ominous warnings of a "capital shortage." Such warnings reflect a growing fear that the risks of financing economic growth have become too high for the banking sector without more government help.¹

The argument over the capital shortage in turn is being used to justify demands for even lower business taxes--which inevitably must result in higher personal taxes or reduced public services or both. As it is, the effective income tax rate on corporate earnings has declined over the last two decades. Over the same period the federal,

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1. Business estimates of the capital shortage vary widely. The New York Stock Exchange claims a "gap" of \$650 billion between 1974 and 1985. The Chase Manhattan Bank estimates a shortfall of roughly \$1.5 trillion over the same period. A more objective study by two Brookings Institution economists claims that there would be no capital shortage, but this is under economic assumptions that have proven unrealistic. Whatever its precise nature, continuing high interest rates mean that there will not be enough capital to take care of many pressing investment needs. Business spokespeople see this as a rationale for more subsidies to capital formation. It is also a rationale for the public allocation of capital to national priorities.

state and local tax bite on a median-income family has doubled.¹ The net effect of the tax system has been one reason why, despite the ostensible social welfare reforms of the Fair Deal, the New Frontier, and the Great Society, the distribution of income and wealth in America has remained virtually unchanged over the past three decades.

But even more tax relief is probably not enough. Proposals such as Rohatyn's RFC and the brazen Ford-Rockefeller proposal for a \$100 billion Energy Corporation are but the first explicit statements that American business will soon need to institutionalize a whole new generation of subsidies from the public treasury. They follow on the Lockheed loan in this country and, for instance, Britain's recent massive bailout of the Chrysler Corporation. In their broad impact they are designed to meet the need, as First Pennsylvania Bank's Chairman John R. Bunting recently stated, "to transfer resources...from the consumer sector to the producer sector of our economy...."² It is for this fundamental reason that despite even the best intentions of its labor supporters corporate-oriented planning must ultimately be opposed to the interests of the American worker--either as consumer, taxpayer, or both. Furthermore, if and when wage and price controls are reinstated, they will have the likely effect--as a Nixon Administration official put it--of "zapping labor."

1. Joseph A. Pechman, Federal Tax Policy, Washington, D.C., The Brookings Institution, 1971, pp. 117-118.

Advisory Commission on Intergovernmental Relations, Trends in Fiscal Federalism 1953-1974, Washington, D.C., 1975, p. 3.

2. The New York Times, June 23, 1974.

There are other problems with corporate-oriented planning: subsidizing business investments in industries where there is already excess productive capacity--and when the fundamental economic problem of income maldistribution hobbles consumer demand--will waste precious capital resources still further. And planning dominated by business concerns will worsen the environmental crisis by, for example, weakening air and water pollution standards, reducing restrictions on strip mining, and generally increasing incentives to speed corporate exploitation of scarce resources--from energy and minerals to such basics as land and water. The modern corporation's inherent need is to expand its capital base and to expand its output. Environmental controls are an unwelcome constraint on these growth objectives.

Implicit in the development of business-oriented planning would also be a tightening collusion between corporate and government bureaucracies. It is no exaggeration to say this could lead to at least some of the elements of a potential American version of the corporate state. As French and Japanese experience demonstrates, effective planning requires an exchange of information, plans, ideas and the development of close relationships between firms and government agencies. As government relies on business to carry out national plans, business can expect to rely on government for protection against disruption. If, as is likely, economic difficulties generate social upheavals, being a Nader Raider--not to mention a labor or minority group organizer--could become a risky proposition.

For all of these reasons, as the economic and political context slowly shifts, the major question during the coming decade is not whether we will plan, but how--and above all for whose benefit. And here is where the hard choices will have to be made between the interests of the large corporations and those of the public at large.

Priorities

A practical policy which meets underlying needs, building on the latent public sentiment in favor of change, and does so in ways which deal with the fundamental long term issues, must begin with employment and inflation. It should rest on the clear recognition, further, that new economic directions must begin to alter the structure of the corporate-dominated economy itself over the coming period.

Jobs. That every American willing and able to work should have a "decent job" has become a proposition to which most American politicians would subscribe. But it has also become clear that Keynesian economic tools cannot provide full employment without ruinous and politically unacceptable inflation.

The solution, as many politicians are coming to realize, is that the government must guarantee employment. The Hawkins-Humphrey Equal Opportunity and Full Employment Bill is a good start. The bill calls for the federal government to act as employer of last resort. At any given time, job guarantee offices across the country would be ready to give public service jobs to any American who applied. These could turn

out to be "make work" jobs but need not be, especially if the unions are willing to cooperate. For a start, jobs could be created in health, transportation, housing, environment, education, and other domestic fields.

The importance of this bill is that it goes beyond the policy of "maximum employment" consistent with stable prices, which has guided American economic policy since the Employment Act of 1946. Even in the best of times such policies have not necessarily resulted in a job for everyone willing and able to work. This bill provides every American with the legal right to a job--enforceable in court. According to a rough estimate made by the Library of Congress, the cost to the Treasury of moving toward full employment over eighteen months through the Hawkins-Humphrey Bill would be about \$15 billion.

One important result of guaranteeing jobs would be an increase in resources available to deal with other major economic problems. For example, it has already been proposed that public service employment could be used to refurbish rail beds to accommodate expanded railroad traffic. Such a program would also in itself stimulate new productive jobs in the manufacture, operation, and maintenance of railroads and mass transit vehicles and equipment.

Both the urban mass transit industry and a large and increasing share of the railroad industry are already underwritten by the taxpayers. Public ownership of both is increasing, not only locally but nationally

as well.¹ Creating jobs that could improve rail transportation could also simultaneously help to produce a consistent and dependable pattern of employment in parts of the country that suffer most from recessions, and could be a tool in regional planning for balanced population growth.

According to Senator Philip Hart a shift of 20% of ground traffic to public transport would create \$1.5 million new jobs by 1985. About 51,000 would be in the construction industry, 134,000 in repairing road beds and electrifying lines, and 450,000 in manufacturing. If this were done, he estimates that 225,000 new jobs would be created annually, which could be filled by unemployed auto workers.

A public guarantee of employment and the rational planning of jobs generated by public investment would have several results. First, people would be less afraid of change. Defense workers would fear cuts in the military budget less if they knew other jobs were waiting. Competition between workers--whites and blacks, and men and women--would be reduced. Business would be less able to work up opposition among workers to environmental restrictions on industry. And it would help overcome resistance to labor-saving innovations that retards progress in many industries.

1. The railroad industry has succeeded in having the government take over its losers, leaving the profitable lines to private enterprise. However, even with increased public subsidies the economic future is cloudy, raising the distinct possibility that, like it or not, the next administration may find itself owning and operating our entire railroad system. Unless public priorities are insisted upon, as John Kenneth Galbraith has pointed out, it is the bankrupt railroads that will be given the government while the ones that might pay are carefully hived off to private enterprise.

Secondly, fundamental job security could reduce the waste and community dislocation associated with changing market conditions, employment prospects, national economic failings or, for instance, corporate decisions to locate in other countries. Such guarantees would not end migration, but they would reduce a substantial portion of the migration within and between areas by people in search of jobs. For example, if some of the smaller cities, especially those in the South, had been able to offer permanent work to all, this might have eliminated much of the current economic burden in New York City. During the last two decades the immigration of job seekers has swelled welfare costs. At the same time the national economic mismanagement has enormously intensified local problems in general. And were we able to deal with the fundamental distortions of urban life caused by unemployment and migration, then we could also expect that welfare mothers and city employees would no longer be such reliable scapegoats for opportunistic politicians.

Moreover, planning for full employment in communities would help to create a more dependable tax base. States and localities would not be forced into what is often ruinous competition with one another to attract industry: and the bargaining between corporations and cities would be on much more equal terms.

But effective planning calls for more change in our economic institutions than many who support planning have been willing to admit. First,

as Wassily Leontief has pointed out, far more information is needed about the performance and plans of specific corporations--information which corporations have refused to make public. We must have the facts to judge how a change in the production pattern of one industry will affect the operations and the labor needs of others. Secondly, on the basis of such information, precise goals must be formulated. Even the auto industries are beginning to concede the need for better mass transit for instance; but what mixture of transportation methods would best serve both the needs of the public for transport and of workers in the transport industries? There must be a political authority capable not only of requiring industry to shift to mass transit and rail production but also so in a way that will increase the jobs available to workers in cities like Detroit as they move away from auto production.

The surprising support the Hawkins-Humphrey bill has received suggests the political feasibility of some limited concrete steps in a new direction. But a serious jobs program will obviously ultimately involve a substantial increase in public control of industry--and it is at this point that the need to be clear about taking first steps towards restructuring the economy must be faced. What is required is not only planning and public money, but above all the power to coordinate different elements of the economy--for example the need for a better rail system and the need to give specific assurances to specific workers in specific communities that they will have jobs.

Recent European experience suggests that to achieve such a result without establishing a civilian version of the military-industrial

complex-where the interests of private contractors dominate a compliant bureaucracy-will ultimately require direct public ownership of some of the most important American industries and services. The publicly owned Alfa Romeo Corporation, for instance, has, as a matter of policy directly placed thousands of jobs in specific distressed areas of Southern Italy.

As we shall argue, public ownership of some industry need not be incompatible with decentralization, nor with the possibility of increased participation of workers and communities in running local industry. It need be neither heavy-handed bureaucratic control, nor simple-minded "nationalization."

The experience with public corporations in Europe and Canada shows that industries under public control can match private corporations in the efficiency and innovation needed to compete in the market. The facts on public enterprise performance are usually obscured by a media attitude that seeks to judge the inherent quality of the public sector by the depressing experience of a resource-starved public hospital but counts the failure of private capital to run a railroad or to live up to an agreement to meet its costs on a defense contract as an aberration. To be sure, there are plentiful examples of red tape burdened bureaucracies, but these are rarely weighted against the waste of a Penn Central or the legendary inefficiencies of the large U.S. steel companies.

What is needed is a balanced review. The Western world is full of fully or partially owned government corporations, like Renault, Air

Canada, Swiss Air, SAS, Finsider in Italy, Banc Nacional de Paris, which are rarely entered as evidence. In an exhaustive comparison between three public and private enterprises in Great Britain since World War II, economist Richard Pryke found that productivity in the nationalized manufacturing industries rose 3.4% per annum between 1948 and 1968, compared with a 2.5% per annum growth in the private manufacturing sector. In fact, Pryke found that only one industry in the entire public sector (which includes the normally low productivity services) failed to do better than the average for the private manufacturing sector. Pryke concluded: "...the public enterprise sector has had a significantly better performance in the respect of technological efficiency than the private sector."¹

In an earlier study William A. Robson concluded:

The truest answer that can be given to the question about the performance of the nationalized industries since they were taken over, is that each one of them is undoubtedly in a better condition than it would have been under private enterprise or, as was the case with gas and electricity, divided between private and municipal ownership. By this I mean that its operating efficiency is higher, its equipment more up-to-date, and its future prospects brighter than they would have been if the industry had not been nationalized.²

A more recent review of nationalized industries in Britain based on information gathered by the British Treasury, again endorses their overall performance. In commenting on the report, Michael Meacher,

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1. Richard Pryke, Public Enterprise in Practice, New York, St. Martin's Press, 1971, p. 442.
 2. William A. Robson, Nationalized Industry and Public Ownership, 2nd Edition, London, George Allen and Unwin, Ltd., 1962, p. 446.

Parliamentary Undersecretary of State for Industry comments: "But, although the record of the nationalized industries is entirely respectable, there is one very strong reason why it has not been substantially better: price restraint. The publicly owned industries have borne by far the biggest burden of government's anti-inflation policy."¹ So beyond providing a profit for the nation as a whole, the nationalized industries have subsidized private industry and consumers through lower prices.

The use of nationalized industries to support private capital is quite common. In fact, the motivation for much public enterprise in Europe has been to bail influential capitalists out of bad investments. The recent nationalization of the failing aircraft engine division of Rolls Royce, for example, was accomplished by the Conservative not the Labour party. Once out from under, corporate interests are free to attack the new public enterprise and deny it support so that it may fail and once again prove the superiority of private enterprise.

Nonetheless, not only have public enterprises generally held their own in very difficult circumstances, but Western governments have increasingly turned to public ownership, particularly in areas of vital economic importance, such as energy. The United States is virtually the only industrialized nation which has not decided to put the strategic core of its energy industry firmly under public control.

1. Michael Meacher, "Public Sector 'Not Failing Nation'". [Manchester] Guardian, Sept. 25, 1974, p. 19.

One area in the United States' economy where rough comparisons between private and public enterprise can be drawn is among electric utilities. Although there are differences in location and technology, evidence from the more than 2,000 publicly owned electric utilities shows that they tend to be somewhat more efficient than private utilities. And because their books are always open and they are more subject to scrutiny they are also more accountable.¹

Once the possibility of new forms of public ownership is admitted, a number of variations are possible which would encourage decentralization and economic competition. For example, large shares of ownership could be sold to employees who could also take on larger responsibilities for management—a practice widespread in Europe. Since 1973 large Swedish companies have been required to include workers on their boards of directors. A few Swedish firms, like Volvo and Granges AB, have gone further, successfully instituting a considerable degree of industrial democracy. In Germany workers elect one-third of the

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1. Even after eliminating the effect of tax and interest advantages, publicly owned utilities have generally lowered operating costs. For example, latest figures (1973) from the Federal Power Commission show that managerial and accounting costs for public utilities were 1.35 mills per kilowatt hour as opposed to 1.44 mills for the private utilities. Administrative costs were .81 mills for the public utilities and 1.07 for the privates. Advertising costs were .09 and .14 respectively.

As for accountability, public utilities have generally been less addicted to energy growth than have the privates. A case in point for public enterprise being more accountable is that it was TVA that blew the whistle on the price conspiracy by electric equipment manufacturers in the late 1950s that sent several corporate executives to jail. (But as we shall argue, T.V.A. is not without other defects.)

membership of a supervisory board of directors of all large corporations. Shareholders elect the other two-thirds. The supervisory board, in turn, appoints the management board, which is responsible for the day-to-day operation of the company. Supervisory boards meet four or five times a year, passing on major investments or structural changes, and approving accounts. In addition, councils must approve all hiring. The councils must give consent to overtime and have a right to participate in decisions on who will be selected for training and who will be hired to train them. The council, in effect, retains a veto power over all company initiatives affecting jobs.¹

There are great limits to the significance of such efforts, but the principle of worker participation is no longer in question throughout much of Europe. If anything, worker participation is growing. A proposal being considered by the ruling coalition in West Germany would expand representation to 50% in all large companies.

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1. "Industrial Democracy in Sweden: Workers at Granges Take Role in Managing," The New York Times, October 14, 1973.

Workers' Participation in Management in the Federal Republic of Germany, Geneva: International Institute for Labour Studies, June 1969, pp. 6-12.

For more information on employee participation in management see: David Jenkins, Industrial Democracy in Europe: The Challenge and Management Responses, Geneva: Business International, 1974; Gerry Hunnius et al. (eds.), Workers' Control: A Reader on Labor and Social Change, New York: Vintage, 1973; Rolf Lindholm et al., Job Reform in Sweden, Stockholm: Swedish Employers' Confederation, 1975; and Ken Coates and Anthony Topham, Industrial Democracy in Great Britain: A Book of Readings and Witnesses for Workers Control, London: MacGibbon & Kee, Ltd., 1968.

As we have noted, polls have shown that employee ownership is an attractive idea for Americans. Recent U.S. tax legislation providing for an additional 1% investment credit to firms which establish trusts for employee ownership of stocks, suggests the idea in part is politically feasible now. The form in which such trusts are established so far has required little participation by workers and to some degree has been a device to provide management with more tax free dollars. What is more important is that the idea of worker ownership and participation has become politically respectable--raising opportunities for new, responsible proposals other than those which simply meet corporate interests under new rhetorical labels.

In our view, the community or communities where the plants are located should also participate in new ownership arrangements through "joint ventures" involving national and local governments, and employees. Again, there are some partial precedents in Europe, for example, 40% of the stock in Volkswagen is owned by the government (20% by the federal government and 20% by the state of Lower Saxony in which the factory is located). Such joint ventures might be especially sensible in industries that depend on government contracts and that--like transportation, defense, and energy--are crucial to long-range planning.

That novel ideas are by no means beyond political debate is further suggested by Senator Kennedy's recent bill which would divest large auto producers of their mass-transit producing facilities if they are in

substantial conflict with their auto producing interests. His legislation would establish a national public trust which could own the subsidiary for up to ten years, and which would be administered by the Ground Transport Reorganization Office in the Office of the President. This basic notion could be broadened for long term planning by giving the trust authority the power to participate in planning for the decentralization of population that is so essential to the future of both urban and rural America. It could also provide that a substantial share of ownership of the resulting corporation also be in the hands of an employee and local community trust.

None of these proposals, nor the existing European precedents, is a full answer for America. Public ownership can be used merely to subsidize a corporate-dominated economy; and worker participation can be a method of co-opting the labor movement. But they do indicate that there are a wide variety of feasible options for restructuring the giant "for-profit" corporation. The challenge is how to do so in ways which meet public rather than corporate priorities.

Inflation

Wage-price controls are probably unavoidable during the next decade--whether we like it or not there will be no other way to deal with the inflationary impact of rising public budgets, administered pricing by giant corporations, continued bottlenecks in the supply of many basic materials and products, and general inflationary expectations of the

public. Unless such controls are conceived equitably, working people will be forced to pay the costs of national economic mismanagement. We may expect demands that such controls be "fair"--for example that they not allow wages to lag behind the cost of living--and that they be accompanied by tax reform to close loopholes, impose a tax on wealth, and capture windfall profits. These, and various proposals for some form of "informal social contract" (as proposed, for instance, by Charles Schultze, former Director of the Budget) are important. But any plan for dealing with inflation in ways which can help unite a new broad based political constituency in the coming decade will, in our judgement, be inadequate unless it aims directly to stabilize the price of the basic necessities--food, housing, medical care, and energy for family use. The Bureau of Labor Statistics estimates that a four-person urban family must spend more than 70 percent of its consumption expenditures on these four items alone in order to maintain a "modest but adequate" standard of living.¹

The pressures of inflation are, in fact, already forcing federal, state and local governments to take direct action on the necessities: food stamps are an attempt directly to contain costs for people living on low incomes. So is Medicare. So too are housing allowances and the growing use of rent control. Legislation by state governments for "lifeline" electricity rates--and even energy stamps--would fix the

1. Bureau of Labor Statistics, "Autumn 1974 Urban Family Budgets," April 9, 1975, p. 2; and Bureau of Labor Statistics Handbook of Methods (BLS Bulletin 1711), Ch.9, "Family Budgets," p. 69.

price of a certain necessary amount of electricity, shifting the burden forward onto the large industrial users. But programs such as these, which merely subsidize consumers, and mainly ones with low incomes, also increase total demand. Without increases in supply, they produce more inflation. Medicare, which increases the demand for health services without increasing or rationalizing their supply, has become a flagrant example.

Public subsidies aimed only at poor people, moreover, will continue to alienate working people and the middle class. Rather than a basic right that a modern industrial economy ought to be able to provide its workers and consumers, stabilizing the costs of necessities has become a part of the degrading and infuriating welfare system--around which an effective political movement will never coalesce. The support of threatened working and middle class people will be achieved only by guaranteeing that basic necessities are in the reach of all.

Stabilizing the price of specific items in the shopping basket is clear and simple. People can measure the effectiveness of programs--the "outcomes" of public policy--by the price at the supermarket counter. Within the context of a coherent planning effort the costs need not be prohibitive. Significant savings can be achieved both through comprehensive planning and specific restructuring programs.

Housing policy illustrates the need for a much more direct solution requiring basic structural change during the years ahead. A "decent home for every American" has been a national "goal" since 1949. After

twenty-five years of trying various half-solutions, it is clear that the housing problem cannot be solved by a program limited to the housing industry itself. Rent controls intended to keep prices down also inhibit investment in more construction. Family housing allowances are both costly and inflationary. It is clear that the home building industry, including its labor practices, must be modernized. As we have suggested, planning for job security should help overcome at least some of labor's resistance to technological change. But to provide adequate housing at fair prices will require direct public action to allocate two factors in home building whose fast rising costs have been major contributors to housing inflation: land and capital.

For the first time, the structural reform of public ownership of land is beginning to be seriously advocated as a basic requirement for a serious housing policy. As former HUD Secretary Robert Wood observed:

Fundamentally, we are at the point where public ownership and public planning are probably the essential components for a genuine land reform program.

Certain levels of density no longer make tolerable private ownership and development even though zoning and planning requirements are available to affect them directly. Only a general plan with land ownership and control being the decisive forces in critical areas can do the job.¹

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1. Robert C. Wood, The Necessary Majority: Middle America and the Urban Crisis, New York: Columbia University Press, 1972, pp. 87-88.

For further information see Bernard Weissbourd, "Satellite Communities," Center for the Study of Democratic Institutions; A Plan for Urban Growth:

The American Institute of Architects in 1972 made a detailed proposal for the joint federal, state, and local acquisition and development of one million acres of land in selected urban-fringe areas of the country. The AIA estimated that one million acres could accommodate one-third of the nation's growth over the next thirty years at the relatively low average density of twenty-five persons per acre.¹ "The appreciating value of this land," said the AIA, "—realized by lease and sale over the next thirty years—would be enough to cover its original cost plus a large proportion of the cost of preparing the land for development."

Public land development is common in Europe. In 1946 Britain created public development corporations to build fifteen new communities each with a population of 60,000. In Sweden in recent years, 80 percent of the housing underwritten by the central government has been built on municipally owned land which is either sold or leased to the builders. In the Netherlands, the public acquisition of land and its lease or sale to developers dates back to 1902. Amsterdam leases all land

Report of the National Policy Task Force, the American Institute of Architects, Memo (newsletter of AIA), January, 1972, Special Issue; Fred Smith, Man and His Urban Environment: A Manual of Specific Considerations for the Seventies and Beyond, New York, Man and His Urban Environment Project, 1972; Jack Patterson, Associate Editor, book review of Mortgage on America, Leonard Downie, Praeger, New York, 1974, in Business Week, "Are these profits without honor?", May 18, 1975.

1. American Institute of Architects, A Plan for Urban Growth: Report of the National Policy Task Force, January 1972.

except for industrial sites, while Rotterdam leases industrial sites and sells land for all other uses. British and Scandinavian experience with public ownership also suggests that local planning authorities can play a useful part in public development. In Sweden, for example, local planning committees prepare a master plan for long range development and a detailed plan that controls current development. The detailed plan, once approved by the town council, requires the town to purchase land in areas that are marked for dense economic activity.

In almost every state, American communities have made fitful attempts at public ownership of land. Experience in locally planned public land ownership, for instance, is being accumulated in cities as diverse as Milwaukee, San Diego, St. George (Vermont), and Yellow Springs (Ohio).

The other structural issue in building is capital. Unless adequate supplies of capital are made available, housing is simply not built, or it is built at high interest costs. Chairman Henry Reuss of the House Banking and Currency Committee has proposed what might be a first step toward the allocation of capital to major national priorities. He suggests that lending institutions be required to allocate part of their capital to the nation's most pressing needs such as low and moderate income housing and mass transit. (Reuss also suggested an important experiment with public ownership: that the Franklin National Bank be nationalized and run as a yardstick against which to judge the performance of other large banks.)

As for food prices the question is not whether they should be directly controlled—agricultural policy has long been dominated by the government—but now to shape the structure of food prices to meet the needs of most consumers. During the coming decade (with perhaps momentary lags) food prices are certain to rise dramatically. As they do, the growing resentment of dissatisfied consumers and urban voters could lead them, in alliance with small and medium sized farmers, to exert pressure to rewrite the old legislation imposed on the US economy by the large agribusiness concerns which dominate the "farm bloc." As Don Paarlberg, head of the Economic Research Service of the U.S. Department of Agriculture, has observed, the 'agricultural establishment' has already "in large measure lost control of the farm policy agenda."¹

The recent Canadian approach to wheat policy, although not without its faults, suggests a broad approach to achieving lower consumer food prices in the US. The Canadian government sets low consumer prices and supplements production costs by direct payments to the farmers. Similar general strategies for perishable commodities were proposed here in the 1949 Brannan Plan, and then forgotten. But the same basic approach has been used in such nations as Sweden, Norway,

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1. Speech at the National Public Policy Conference, Clymer, New York, September 11, 1975; reprinted in *Nutrition and Health*, Select Committee on Nutrition and Human Needs, U.S. Senate, 94th Congress, 1st Session, December 1975, p. 130.

Japan, and in Britain before it entered the Common Market. In Sweden, food inflation problems in recent years have led to a price freeze of key consumer commodities sustained by a direct payments program for farmers.

Since 1972 payments for food by American consumers have risen, almost incredibly, by nearly \$60 billion¹--in effect the most regressive tax one could imagine. A program of supplementary direct payments would not only be cheaper but its costs would be more fairly distributed. A new approach should aim to support the small- and medium-size farmer, and small cooperatives rather than large agribusiness concerns.

The U.S. Department of Agriculture itself has found that an optimal sized farm is the amount of acreage that can be handled by one person and a complement of machinery. Economic and sociological studies have shown that small-farm communities have a healthier economic and social life than do the rural communities dominated by corporate farms and poor laborers.² A move to decentralize production and

1. U.S. Department of Agriculture, Economic Research Service, National Food Situation, May 1975, p. 8.
2. J. Patrick Madden, Economics of Size in Farming: Theory, Analytical Procedures, and a Review of Selected Studies, U.S. Department of Agriculture, Economic Research Service, Agricultural Economic Report 107, February 1967, pp. ii-iii.

Walter R. Goldschmidt, Small Business and the Community: A Study in Central Valley of California on Effects of Scale of Farm Operations, Special Committee to Study Problems of American Small Business, U.S. Senate, 79th Congress, 2nd Session, December 23, 1946; reprinted in Role of Giant Corporations, Hearings before Subcommittee on Monopoly, Select Committee on Small Business, U.S. Senate, 92nd Congress, 1st and 2nd Sessions, Part 3A-Appendixes, November 23 and December 1, 1971 and March 1 and 2, 1972.

and distribution could reduce the enormous transport costs now characteristic of American food production. Beyond this, antitrust policies in the food industry could help reduce inflation.

A direct approach to inflation which aims to stabilize the price of a family's necessities--as in the above two illustrations--should not attempt to stabilize all prices. Prices for luxury foods or second vacation homes, for example, should be allowed to rise. This would not only be more equitable, but might also help to conserve resources.

Resource Conservation

Stable prices for necessities, like stable jobs, would put a more secure economic floor under working people. They would also begin to address directly the inequitable distribution of income and wealth. Relief from the anxiety of being without work and without money for food and rent would, further, provide many with the time and energy to make more of their own lives.

Breaking new ground to overcome the inflation barrier to full resource use would also permit us to end some of the incredible waste that now characterizes American capitalism. Estimates are that unemployment alone has cost more than two trillion dollars in lost production over the last 25 years,¹ and this includes no assessment,

1. This is less than some experts estimate. For instance, Leon H. Keyserling calculates that \$2.6 trillion of production were lost in the 22 years from 1953 to 1974 inclusive. Testimony of Leon H. Keyserling on national economic planning before the Joint Economic Committee, June 12, 1975, p. 2 and chart 2.

for instance, of productivity lost because men and women, justly fearing unemployment, have opposed new technological changes which could have made the economy more efficient. Dealing with such issues in less wasteful ways over the next 25 years could help offset the costs of new programs, permit an increase in equity, and ultimately help reestablish a positive attitude towards reasonable technical progress.

Additional resources can be saved through the cuts in unnecessary military spending which would be more feasible in a context of economic security. More fundamentally, such security would free our society to deal with the long-range and deeper economic issues that face us, including the steady depletion of natural resources and the alienation of people from their work and their community.

During the coming twenty-five years as we find ourselves running short of many natural resources, we will have to alter dramatically what we produce and what we consume. While there is much debate over specific details, there is a broad consensus that we must reduce our consumption of nonrenewable resources in general. The U.S. is already dependent on imports for two-thirds or more of the manganese, cobalt, platinum, chromium, tin, aluminum, nickel and tungsten we consume. The government projects the overall dependence rate for key minerals to be in the 30-50 per cent range by the year 2000, and it has pinpointed chromium, platinum, and bauxite as vulnerable to price-gouging and supply

disruptions.¹ In energy, the limits are even more severe. Recently, four authoritative studies estimated that U.S. oil reserves--including estimates of undiscovered deposits--will be exhausted at about the turn of the century, with specified dates ranging from 1998 to 2007.² Assigning an exhaustion date is only symbolic of the central message: we will soon be totally dependent on foreign sources of oil.

While technological miracles might bring new supplies of resources or cheap substitutes, the growing consensus is that, unless new directions and conservation initiatives are pursued, the probability is for severe bottlenecks in resource supply over the coming decades, with economic disruption as a minimal result. Resource analysts are coming to agree that availability--rather than literal supplies--will be the crucial question. The National Academy of Sciences, the President's Council on International Economic Policy, the U.S. Geological Survey, Britain's Royal Institute of International Affairs--all have taken great pains to warn that new technologies take decades to bring into use, that new methods and substitute materials are enormously costly, and even relatively small disruptions in the

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1. The United States in A Changing World Economy, Vol. II: Background Material, Council on International Economic Policy, Washington, D.C., 1971, p. 55; International Economic Report of the President, Council on International Economic Policy, Washington, D.C., 1975, p. 27.
 2. The studies were conducted separately by the Mobil Oil Corp., the National Petroleum Council, the National Academy of Sciences and former U.S. Geological Survey analyst M. King Hubbert and reported in Science magazine on March 21, 1975. Each study assumed an annual consumption growth rate slightly lower than recent rates and a U.S. import dependence of 35 per cent (compared to the pre-embargo 38 per cent level).

supply of key materials can produce (and have produced) quick, severe inflation and unemployment.¹ Moreover, as we force the widespread application of dangerous production methods and technologies--nuclear power, strip mining, off-shore drilling, intense fertilization--we increase the ecological dangers while accelerating the depletion of scarce resources for the succeeding period.

Dealing successfully with the complex problems inherent in resource scarcities will require long range planning. Relying only on the market not only results in sudden job and price dislocations, but it prevents us from making rational investment decisions. To prepare for the energy crisis of 1973 by finding, producing, refining, and storing more petroleum, as well as developing other sources of energy, would have taken a decade. But five years before the crisis refined petroleum prices were still declining. Even as late as 1973 they were rising at a considerably slower rate than the general price level. The last thing in the world that they were signaling was the need for more drilling, or for recycling, or for a search for other energy sources.

A national policy for energy and other resources will require planned economic growth of resource use at a slower rate than that of the 1960s. Otherwise the economy will continue to be extremely vulnerable

1. See NAS, Mineral Resources and the Environment, Washington, D.C., 1975, pp. 46 and 65; CIEP, Special Report on Critical Imported Materials, Washington, D.C., Dec. 1974, p. 15; USGS, April 24, 1975 press release, "Reordering of Energy Sources a Staggering Job"; RIIA, The Politics of Scarcity, Oxford University Press, 1975, p. 15.

to shortages of foreign supplies. Our economic and environmental priorities will be even more distorted by such policies as the \$100 billion energy program proposed by Ford and Rockefeller which is designed to facilitate centralized, high-technology modes of energy production.

A serious commitment to job security and price stability would reduce the inequities of price and job dislocations which can be associated with conservation policies. They would accordingly help to make growth that is both planned and limited much more acceptable to public opinion. And this is critical to the building of a positive politics of economic restructuring to which a significant group of Americans are increasingly committed on purely environmental and ecological grounds.

But once we face the facts of limited resources, we will have to reconsider many deeply ingrained American habits and practices, among them the mass advertising that is the principal stimulant of consumer appetites. It seems unlikely that the incessant psychological pressure on American consumers to buy more and more is compatible with the long-term need to conserve resources and to evolve ways of living that will protect the environment. How advertising can be controlled without impairing constitutional freedoms should be a central question of the next twenty-five years.

In general, the modern corporation itself, with its tendency to unrestricted growth, is in the long run incompatible with an economy that will have a lower rate of growth and a lower rate of exploitation

of resources than we have known in the past. The modern corporation must expand sales, hence foster consumption rather than conservation--a dynamic which is ultimately at odds with the growing resource constraints. For this reason, in order to plan for more secure employment, and to undercut the expansionist tendencies which have often led to American interventions abroad, the giant corporations now at the core of the economy must gradually be transformed or replaced.

This is particularly true of corporations that control energy resources. It is not just their monopolistic practices that make these firms unfit to be in charge of our supply of energy, but rather their inherent need for growth. Thus, even if a successful antitrust action could be brought against the larger multinational energy companies, the basic problem they pose would not be solved, no more than it was solved by the dispersal of Standard Oil in 1911. In fact, while breaking up some of the "seven sisters" might restrain price increases, the waste and duplication of creating more oil corporations would make a rational policy of conserving energy even less attainable.

The answer lies in conceiving new economic institutions that could undertake the long-term planning to protect national resources which private corporations cannot. As the Americans who responded to the Hart poll recognized, and as just about every Western industrialized nation has concluded, this will also require public ownership. The Stevenson-Magnuson Bill, which calls for a publicly owned oil and gas corporation

to develop reserves on public land (where most US reserves are) is a reasonable first step in this direction. That eight Senators have endorsed this bill again suggests that it is politically possible not merely to discuss new kinds of ownership but eventually, perhaps, to do something about them.

Still, public ownership does not necessarily guarantee sound resource use. The Tennessee Valley Authority, for example, is hardly less devoted to growth than most private electric companies. It will be necessary therefore to add a further dimension to the concept of ownership--whether public or private. Ways must be found for the public at large to assert a form of trusteeship over both land and natural resources. The guiding principle would be that the public, as trustee, may not waste resources needed for the next generation by, for instance, giving away lease rights at low prices. The idea of trusteeship has already been recognized in preliminary form in several states, which do provide for legal remedies--enforceable through citizen suits--for failure on the part of public officials to fulfill their broader responsibilities in connection with some environmental issues.

At the local level there is need to build on the numerous activities at local resource conservation and the development of small scale, ecologically efficient technologies. Much genuine innovation in recycling and the use of solar and wind power is coming from the growing network of individuals and grassroot organizations trying to find ways in which they can live a more environmentally rational life. Their willingness to share information and work cooperatively suggests values that will

become more important in the resource depleted future. Linked to local community protest organizing against utility rate structures that encourage waste, against nonreturnable containers, against carelessly planned nuclear power and oil exploration programs and the like, this emerging network of people could become an important part of a new political movement to which they could bring the direct experience of cooperation, participation and conservation.

Economic Democracy

Over the coming decade, the economy can be planned for full employment, stable prices, and conservation of natural resources--or it can be planned for continued inflationary growth and a more unjust distribution of income and wealth. The next years will see a clear tendency toward increasing concentration of economic power in the hands of public and private bureaucracies. We may not like it, but we must face it: otherwise we will not be able to deal with its consequences.

It will not help to long for a vanished era of small firms and free markets. Antitrust action does make sense in some cases, for example in breaking up various large integrated food and agricultural corporate interests. In transportation a carefully designed policy of deregulation might increase some competition in, for instance, trucking transportation--but an overall policy of deregulation, as advocated by many conservatives and neo-conservatives--would likely lead ultimately both to an increase in concentration and to removing transport services from many American communities. In both the agricultural and transportation areas the

fundamental issue is positive planning--to stabilize prices and small farmers on the one hand; to provide an integrated transportation network on the other. In such a context--but only in such a context--is a selective increase in antitrust activity likely to be compatible with broader public goals.

The fundamental question is whether economic democracy and decentralization can become major goals of economic policy. Not only are these values appropriate for our national temper, but without a vision that promises positive solutions to pressing problems and a reduction in the centralization of power in America there is little hope for political support for the necessary expansion of public control over the economy.

One way to dismantle concentrated power would be to encourage employees both to own corporations and to participate in their management. As many people now recognize, most major corporations are entirely in the hands of a self-perpetuating management. In Professor Galbraith's phrase, "the euthanasia of the stock holder" is almost accomplished for most of our largest firms. Management is accountable virtually to no one.

The three-way arrangements for joint ownership by the public, the employees, and the community we have already suggested for the federal contractors in transportation could be applied to other federal contractors and to other large industries. As first steps in a new direction, nonsupervisory employees could be provided by law with seats on the board of directors. This practice though not without its co-optive faults in the absence of a longer term politics of restructuring is already common,

as we have indicated, in West Germany and elsewhere in Europe. Consumers and representatives of communities that must carry the burdens as well as receive the benefits of a firm's location might also be eligible for seats. Investors would, of course, receive a return on their capital--just as employees receive a return on their labor--but the control of the entire enterprise, which includes labor as well as capital, would be shared.

These are new concepts for America and it would be naive to suggest rigid formulas. The evolution of new economic institutions out of the shell of the modern corporation should come from a healthy process of trial and error, study and debate. We can gain some insights from the European experience. For example, we know that the lack of information has limited the degree to which board representatives of labor--and even the public--can truly participate in making corporate policy decisions. It will also take time and experience to determine the degree to which the goals of planning and participation can be served in the same institutions. Some industries--such as energy, banking, mass transportation, and communications--are so central to a stable economy that national public ownership is probably essential; and to achieve stability of jobs in specific communities will ultimately require other industrial enterprises to be under public control, preferably with a major role for local publics. Large firms in other industries can be encouraged to experiment with varieties of ownership arrangements that expand democracy. And for a long time to come, the bulk of small and medium businesses will perhaps always be better left in private

entrepreneurial or cooperative hands.

To further strengthen the thrust of decentralization, various new community level economic institutions should be encouraged. A number of these--including consumer and farming cooperatives, community development corporations, municipally owned enterprises, even a few worker-owned factories have demonstrated their feasibility over the last decade. Proposals by Ralph Nader and others have been made for development banks to help finance and provide technical assistance to such local institutions. Because they have roots in the life of towns and regions, they are much less likely than the modern business corporation to be dominated by growth concerns. In a secure economy the small local entrepreneur, shopkeeper, and artisan might also be strengthened.

Beyond such institutional shifts, as we move deeper into a planned economy, it is imperative that we begin to widen participation in the process of planning itself. Fortunately, we do not have to start from scratch. We have behind us some ten years of experience with various attempts at citizen participation and community planning--whether in urban renewal and antipoverty programs or in such efforts as the campaigns to stop throughways from ruining cities. In many of these cases citizens had to fight for the right to participate; and their actions were often merely reactive. They were trying to stop some outrage--a highway, a monstrous piece of public housing, the pollution of a river--rather than plan new institutions.

Nevertheless hundreds of thousands of people have had experience in organizing their neighbors, interpreting zoning maps, making community surveys, demonstrating in front of city hall, and so forth. These are all skills that can help to prepare people for democratic planning. The experience of the last decade took place in an environment where planning itself had little meaning. What good did it do to participate in the planning of one's community if the key factors—like the location of jobs and housing and schools—were beyond the community's control? If there were a national commitment to make jobs secure and to allocate capital more fairly—to stabilize the economic context of local community planning—community participation would have much more point and appeal; citizens might have the security they need to make a commitment to their own locality.

Community plans for population growth, jobs, housing, transportation could, and should, be the basis upon which national resources are allocated. What is needed now is that local community planning enter a new phase. Direct assistance should be given to enable citizens in neighborhoods and towns and states to engage in serious deliberations about what they want their town or neighborhood to look like. So long as we do not undertake the effort to build a local capacity for citizen planning, the planning we get must inevitably be by centralized bureaucracies.

Beginning efforts for democratic planning are now being tried in various cities. New York City, for example, has a system of community boards which advise the borough presidents on physical planning, capital

budgeting and social welfare proposals. The boards also have a voice in assigning their district's share of new street lights, bus shelters, etc. A small number of boards have even inched further and control their own funds for small scale projects. The boards are limited in power and are not fully democratic; nevertheless, they could be the basis for what might eventually become a community controlled planning system. The charter amendments passed in the fall of 1975 call for a gradually expanding role for the boards.

Across the continent in Salem, Oregon a similar developmental process is also underway. Salem, a city of 76,000, now has nine Neighborhood Planning Associations which plan land use, parks and recreation, mass transportation, schools and housing, and zoned industrial land.

New York City and Salem are only two examples. There are numerous other community board programs getting underway throughout the country, including Washington, D.C.; Pittsburgh; Birmingham; Dayton; Minneapolis and Chula Vista, California. These programs are not confined to urban areas, as programs in Guilford County, North Carolina and Washington County, Oregon suggest.

Hawaii, Washington, and Iowa have also begun to involve thousands of citizens in state planning for the next twenty-five years. In Iowa, a serious attempt to encourage citizens to discuss plans for the state over the coming quarter century was instituted by "Iowa 2000". Although the effort was, obviously, an initial experiment, nevertheless, 47,000 people participated in meetings and discussions held throughout the state. Thereafter regional meetings of over 1,800 participants met and chose a state conference of 500 delegates to attempt to define long

term resource, economic and quality of life issues for the state.

These efforts are obviously only beginning points. Nevertheless, there is evidence showing that the issues, techniques, and technology of such planning are not beyond the capacities of ordinary citizens, if we allow a reasonable time for them to acquire experience, and if more is done to supply them with information.

A democratically determined national plan should ultimately be based on integrated and carefully balanced consideration of the plans of thousands of communities and neighborhoods in America--not on the politically balanced views of a presidential staff and a few powerful Congressional chairmen. Section seven of the Hawkins-Humphrey Equal Opportunity and Full Employment Bill has a provision for local planning councils and "community boards" to determine priority projects on which public service employees would work. But these are merely advisory. The real power would still be in the hands of the bureaucracy; in the all-too-familiar pattern, citizen participation is no more than a rhetorical gesture to democratic ideals. The requirements for citizen participation in the new transportation and housing programs, on the other hand, have some serious provisions for participation. Community planning councils should reflect, not dictate, community priorities.

Democracy is a value in and of itself, to be pursued for its own sake. But there are additional reasons for making it a major goal of economic policy. During the next decade and after Americans are going to be asked to make many adjustments and sacrifices. Only when there

is a sense of community and of participation will such plans have their trust. Without that trust American democracy itself will be hard put to survive. More fundamentally, economic policy must, we believe, serve the broader, more positive goal of reinvigorating the experience of community in America.

The Emerging Challenge

It would be foolish not to acknowledge the power of the institutions that stand in the way of the broad directions we have been suggesting: the larger corporations and banks, the entrenched federal bureaucracy, the national labor unions, which have traditionally distrusted schemes for decentralization and for worker and community participation in managing industry. All will fight many if not most of these changes. All have more power, and control over American politicians, than any group now advocating restructuring proposals and democratic planning. The discontent and readiness for change reflected in the polls and the emerging ideas for planning and economic democracy have not been translated into a political movement.

Yet just this question--whether the large number of Americans who have much to gain from a realignment of American politics can come together in significant power--cannot be answered at present. We are entering a period of political ambiguity and complexity. A conservative trend, exploiting the fear and confusion of the continuing economic crisis, might dominate American politics for a substantial period. This is, in fact, all but certain to occur if the groups which make up the

potential elements of a new movement, fighting a negative rearguard defense against conservative attack, and fearing new initiatives beyond traditional reform, fail to develop a common agenda and a new strategy. A polarization following the Wallace and Reagan trajectory but characterized by extreme forms of reaction would then likely result, particularly if significant violence erupts over the coming period.

On the other hand, as the economic crisis continues, as traditional measures continue to fail, as larger benefits for the corporations are enacted, the situation may produce a climate for new departures. The evidence from Europe suggests a context in which progressive groupings, for the most part Socialists, have haltingly moved into much more prominent public roles at the same time they have been forced to advance more radical proposals. The United States has no significant socialist tradition, nor do many of the European proposals for nationalization make sense in America. But the logic of economic necessity which both generates political constitutencies and defines the need for new answers to unsolved problems is also beginning to emerge here.

In our judgement there may be possibilities for significant political change in the United States over the coming period. Either or both major parties could well split during the next four years. New leadership will replace the old labor bureaucrats in some parts of the labor movement. A wide variety of minority, women's, consumer, environmental and neighborhood development organizations are slowly but steadily growing in strength. These and other developments can be ignored only

at the risk of yielding the future to drift, decay and ultimate reaction by default. The polls hint that even though the public rejects such labels as "liberal" and opposes big government, there is interest in the substance of quite significant measures of economic restructuring. Accordingly if we are to seriously explore the possibilities of the coming period, what is needed are positive solutions to pressing problems which simultaneously decentralize the major centers of power and decision-making in the nation.

A new politics of restructuring would necessarily have to focus on programmatic directions which unite rather than divide; which both protect the environment and stabilize specific jobs in specific communities; which both hold down inflation and permit full employment and rational resource use. Such programs inherently require planning. In the end, therefore, as we have argued, the question is whether this central issue will become the last triumph of corporate power, or the last opportunity for a renewal of democracy and community in America.

Senator CULVER. Thank you very much, Dr. Alperovitz.

This has been extremely valuable, and I think we are fortunate this morning to have witnesses who have some rather sharp differences of opinion.

I think it would be most useful at this stage if we could afford each of you an opportunity to address some of the observations and points of view that have been presented and to have an informal exchange among yourselves to elicit more sharply some of your differences or to challenge some of your premises.

Why don't we proceed in that manner. Would you like to begin, Mr. Forrester?

It has been suggested, for example, that you are a doomsayer, a pessimist, in the Limits-to-Growth debate. As a counter argument, it has also been suggested that we will muddle through some way, that we should be more optimistic about our future and growth capability, and that technology can help us sort things out.

Also it has been suggested that your computer modeling techniques and system dynamics approach is defective to the extent that it is not really capable of calculating political judgments, given the entirely new kinds of social-political-economic environment we have to anticipate.

That probably is enough to begin the discussion.

MR. FORRESTER. Let me glance down my notes and make a few comments. I guess one thing that attracted my interest in Mr. Molitor's paper is what I saw as an almost complete discrepancy between the opening comments and the rest of the paper in which he cast himself as an optimist, and then gave us a paper with as stark a set of necessary tasks as one could hope to see coming out of a high degree of pessimism about continuation of present trends.

In other words, his agenda for action suggested that indeed all present viewpoints, trends, and attitudes are probably up for review. And so as far as the major substance of his paper is concerned, I think he shows relatively little difference from the comments that I made or that were made by Mr. Alperovitz.

There is, however, one difference I think that I see between my own views on the one hand and Mr. Molitor's on the other. He seems to expect a continuation of centralization. He expects a continuation of the trend of international trade. And it seems to me that both of these are leading toward instability, and that probably we are almost at the end of the pendulum swing in both.

It is my feeling relative to international trade that this has reached a fairly unstable point and that the turn will be toward the idea of a higher degree of national self-sufficiency for all countries, and that both international trade and the multinational corporation have probably strained their environment to the point that there will be a breakdown from the sheer weight of the opposition that is building up.

Multinational corporations are in difficulty with their own countries. They are in difficulty with their host countries where they operate. They are in difficulty because they are not, many of them, regenerating the kind of management necessary to keep them going.

They are in difficulty because apparently they do lead to the decline in integrity that we have been seeing. And I believe they are going to run into political difficulty.

All of this is really for the reasons that Mr. Alperovitz mentioned, that we have gotten to a situation where they are really not compatible with the multiplicity of political dimensions.

So I don't think we should make the assumption that these trends will continue, but merely that they are indeed part of the political debate.

And the question of whether they are going to move towards centralization or not is one of the very big issues. It seems to me there are three broad possible alternatives.

One is continuation of growth in the large corporation. One is resolution of the political difficulties by bringing the large corporation under governmental management, which, in a sense, is to say make it still bigger and more monolithic. I don't think the evidence for governmental management is sufficiently bright to give us much hope. The other is very difficult, and many would think unlikely: move toward a reversal into smaller units, decentralization, national internal self-sufficiency, and within the big nations to regional self-sufficiency.

I suspect there is going to be great pressure for this. There is a lot of logic for it. Whether or not it happens is part of the debate for the next decade.

On the matter of computer models and the ability to introduce political judgment, I would say that it is entirely possible to put into computer models anything that can be described in the English language.

If one cannot describe what he means by political judgment, if he can't lay down the assumptions, if he can't talk about the processes, then I am a little skeptical that the judgment part of it is in fact going to prevail unless it can be articulated.

If political judgment can be articulated, it can be linked in computer models to the real economy and the financial economy, and one can begin to put together values, ethics, and politics with finances and make progress toward understanding the interactions.

By comprehensive modeling one can take articulated statements about political processes and set them in the context of the major forces that cause the political judgments to change.

I agree that it will be several decades before present new ideas become public policy. One therefore does in fact have the handwriting on the wall necessary to deal with emerging political changes in the context of the rest of the socioeconomic system.

It is difficult to do such modeling of social change. It is relatively new. It will be controversial, but so is politics.

Senator CULVER. Mr. Molitor, would you like to make some comments at this time?

Mr. MOLITOR. I didn't mean in any way to disparage Dr. Forrester's work. It is extremely important. Certainly it does motivate a lot of people to think very carefully about our current situation and where we are trending.

Recounting some gloomy current situations can make me sound pessimistic. I am not. I am quite optimistic.

I feel there are ways of overcoming what may seem to be apparent limitations. Apparent limitations are built into simulated studies and this is one of their shortcomings. To this point, I have several charts I would like to introduce for the record. These charts are from works by John McHale and Ralph Lapp.

The first charts show, for example, magnitude increases of speed over the course of history. They start with man on foot traveling at a speed of 3 miles per hour, to sailing vessels, horse-drawn coaches, steam locomotives, automobiles, the first transatlantic flight, early jets, the X-15, and manned satellites. The plot is one of exponential increases, not simple-line extrapolations. Speed of travel has increased by huge quantum leaps in magnitude. Each new level probably was unthinkable at earlier stages.

Similar charts, depict quantum leaps in energy efficiency, explosive power, and killing area, computed capacity, and miniaturization, and energy substitutes.

Some of John McHale's work on energy substitutions are particularly instructive in light of our current energy problems. McHale has structured the various energy sources upon which man has relied over the course of history. Graphically, the charts show how man's early reliance on his own muscle and animal power has waned. Wood subsequently became a major energy source; then coal; next oil and natural gas; and now nuclear. Each source became a substitute, later to be displaced itself.

What I am stressing is that technology has a way of continually surpassing supposed limits.

Second, I want to focus on the broader kinds of structural changes that are afoot in the world today.

Many writers, Daniel Bell in particular, have commented on emergence of the so-called post-industrial society. Many are convinced that this shift entails major changes in values and attitudes greater in impact than the wrenching changes which accompanied the Renaissance or the Reformation.

This major change is being encountered in the advanced urbanized/industrialized nations of the world. Enormous changes in our approach to life are underway. Several hundred changes are occurring.

Through most all of recorded history society has been agrarian based. Man's existence has, for the most part, been based on just satisfying basic necessities. Today in these United States, depending on whose figures you look at, as few as 3.5 percent of our work force is engaged in providing a bounteous agricultural output. Crop output is so great that America supplies major needs worldwide, as well as providing more than enough food for domestic needs. An incredibly small fraction of Americans now are engaged in agricultural production.

The next chapter of economic development is characterized as the era of industrialization. Relatively, this is a recent phenomenon. The period of industrialization has been dominant over the last 150 years.

In recent years the United States has employed only a small fraction of its work force—something on the range of 20 to 24 percent—in industrialized undertakings.

These two sectors—the agricultural and industrial—produce things. Things mean materialism. Materialism involves basing society, its laws and the social fabric on property.

In 1956 America crossed over an important historical threshold. This country became the first service economy in the entire world. A new third phase of economic development had been reached. At

that time more Americans were involved not in producing things, but working with their minds.

America presently is well along the way toward the fourth phase of economic maturation. This fourth sectoral shift, takes us into what writers now call the knowledge/education/information industries. By the year 2000 perhaps as much as 66 percent of the U.S. work force will be involved in working with matters of the mind. When most people are working in services or with their minds, the importance of property begins to decline, the central capital becomes matters of the mind and of the spirit, not property/objects/things.

I suggest that such major shifts in the way we organize society produce profound changes in basic philosophical outlook, values, and beliefs.

I am not so sure that many of the computer simulations take such fundamental shifts into consideration.

Senator CULVER. Mr. Alperovitz.

Mr. ALPEROVITZ. Let me make two minor points and then a couple that are slightly larger. One, I didn't mean, Dr. Forrester, to imply that the kinds of work you have done could not handle a political input. I thoroughly agree with your comment that it certainly can.

You have done it in a very sophisticated and meaningful way. My point was that the key judgments about politics that go into your computer have to rest upon judgments that many people can make, particularly since we are entering an entirely new context, and there is no way to extrapolate the feed-in on weights you place on political judgments.

The second point has to do with the technology question. I just want to draw your attention, Senator, to pages 36 and 37 of our paper where we cite a reference to the National Academy of Sciences, the President's Council on International and Economic Policy, U.S. Geological Society, and Britain's Royal Institution of International Affairs.

Each has stressed—and many others have stressed—and this is only in reference to some of the literature there, has stressed that while in theory there may be technological solutions to almost any of the problems we have been talking about, the problem of long leadtimes to actually implement those technologies, and the extremely high capital costs associated with many of them, particularly energy, raise the problem again to the level of financial capacity and political capacity, not simply technological capacity.

I am sure we could discuss this at length. But I think the questions are far too broad. For instance, the speed of travel question you mentioned. I don't know the exact figure, but I have seen the order of magnitude of people who are going very fast in jets is 3 percent of the population. The order of magnitude of people moving from home to work and the time of that journey has shifted very little since the length of the journey and congestion has increased in recent years.

They are very important things to dissect, more than I have time to do here.

The two broader problems I would like to go to, one raised by Dr. Forrester and one raised by both the other panelists, have to do more broadly with the key issue of population versus the standard of living.

I think that formulation that has the key tradeoff, while one of the questions that obviously has to be considered, I think that question obscures more issues than it helps illuminate.

The reason I put it this way is this: What it suggests is we have a lower standard of living and lower the population in order to have a decent standard of living. That may be the case very far out beyond the year 2000, depending upon what population projections you assume.

Why it obscures the issue for me is this: If we are considering what kind of planning makes sense over the next 25 years, it is terribly important to realize that the enormous waste of the economy, the waste of living standards, of a mismanaged economy, is extremely high—on the order of \$3 trillion or \$4 trillion, depending on whose estimate you had over the last 25 years—and likely to be much greater simply by slow unemployment and slow productivity.

Further, if you consider the fact that lack of planning has not permitted us, for instance, in energy to do what is self-evidently possible. The Swedes, for instance, with a higher per capita standard of living, as many know, use 60 percent of the energy we do to get that standard of living.

So that it is possible with planning and integrated technologies to achieve high standards of life and lower resource use if the planning is adequate.

So there is another area. One is unemployment. Two has to do with energy use. Three has to do with productivity possibilities.

This country is lagging in its potential for productivity. Again if you compare it with other European countries at the same state of industrial development as measured by per capita income, we have been averaging about 3 percent productivity years per man per year. Most European countries are in the 4-, 5-, and some in the 6-percent range; to say nothing that the Japanese are moving out in the 8-, 9-, and 10-percent range.

It is no argument we are going to get to the Japanese productivity levels. But it is my argument with fundamental planning and reorganization we can move a percentage point up if the politics sustains it. So output per man from the same resource base could be exceedingly high, if that is what we choose. You could take it out at a later time.

My point can be summarized this way. The first key misconception I think we get on that kind of tradeoff is this: If we are willing to take the kinds of measures in terms of planning that are well-known throughout the world and have been done, and that is a political issue, then it is possible with the same resource base and full use of manpower and womanpower and elimination of much waste and increases of productivity to have very decent standards of living indeed.

As I said, the order of magnitude is suggested by the fact we wasted \$2 to \$4 trillion in the last 25 years. If you simply look at unemployment figures, big numbers are here. They are so big people are very nervous about them because the implications are there that implies very great restrictions on the nature of large corporations' capacity to make its planning decisions.

So the tradeoff is more between resources management and efficiency and the priorities and prerogatives of the large corporations.

A little bit more on that. For instance, I think the key issue has to be talked about in terms of a different standard of life, equally

high and perhaps of greater quality, rather than lower standards of living.

What I mean is suggested by the fact planned cities simply can reduce cost of transportation and other costs in the order of magnitude of 50 to 60 percent. The people live a decent life at a high standard but lower cost.

Similarly, the Swedish energy mechanism which recycles heat, for instance, and uses it both for electricity and heating homes and businesses.

That is a different way of organizing life which can produce a high and meaningful standard of life which is not measured by our usual indexes of standard of living.

Enough for that, except to say I think the real tradeoff then comes to be the priorities and prerogatives of the key economic institutions—primarily the joint corporation—and the enormous capacity of exceedingly wealthy countries. The planning can deal with that.

The final point has to do again with the question of what makes sense in terms of institutional organizations. If you come at it from the point of view of specific communities, where people live, our view is that there is a great range for decentralization and that the debate about centralization and decentralization is more complicated than often suggested.

There is a role for an increasing stability and strength for the small businessman. There is a greater role for workers in participation of management, for cooperatives, for municipal enterprises like utilities and land banks. There is a greater role for decentralization in that sense.

However, simultaneously, in our judgment, there is need for sufficient centralization to stabilize communities and to deal with macro-economic patterns.

I think ultimately the regional level does make things work in a long-term trend; so a mixed balance between stability and radical centralization at the local level, with sufficient support.

That gets us back again to forms of large economic enterprise. In this case we have been looking at it as hard as we can and combined these judgments with the judgment that the growth dynamic of the for-profit corporation, which must push consumption—that is a conflict with the needs—leads us to looking at various forms of combined management; public ownership, if you like.

But it is the establishment, for instance, of a national public trust to own several large corporations with joint participation of the people in a community where the plant actually exists and the people who work there.

Three-way trusts are joint ventures between the various parties concerned for these kinds of large enterprises.

If you like, the political viability of talking about these kinds of subjects has been, in our view, made clear by the fact the Stevens and Magnuson legislation for public ownership of corporations has been supported by a very large number of Senators.

Chairman of the House Banking Committee has in fact called for public ownership or nationalization of Franco Nationale. Senator Kennedy now has legislation introduced which takes a drastic step of having public trust established to hold the subsidiaries, for instance,

of General Motors, which have to do with mass transit, because they might be in conflict of interest with auto production. A public trust could hold these up to 10 years in certain circumstances.

So the idea is we could talk about radical new forms in this country as most European countries have done in the last decade. We think they will have increasing importance over the period.

The question is can we combine in an intelligent and sophisticated way the needs of local communities with sufficient public control and planning at the higher levels to make security and resource problems possible to deal with.

I should mention one other point. We have taken a look at what turned out to be a red herring in public management. We thought we had been brought up the same way everyone else had been. We thought public ownership was inevitable.

It turns out the literature of local public utilities is there are 2,000 in the country. They are as efficient on balance when you look across the ranges as private. The European literature suggests very much the same. Efficiency measures on European nationalized industries is about the same as private industries, if you want to think about that.

The reason that is obvious, if you get beyond the targets of the bad guy at the post office, it is obvious if you look at Penn Central or the steel industry and look at a range of industries in any measure that is fair by comparison, public and private comes out about the same.

What you do get from public is internal management. Efficiency turns out to be negligible. What you do get is the capacity to achieve certain goals of the kind you are talking about: Reduce growth and stability. That is a minor thing.

Senator CULVER. Dr. Forrester?

Mr. FORRESTER. The growth debate will be shaped by the very changes given to us by Mr. Molitor.

He talked about exponential increases in speed. Such are indicative of the technological complexity that is leading to many social stresses.

He mentioned exponential increases in killing power and this gives the possibility of atomic bomb blackmail in large cities. Such technological change will be a powerful force against further concentration of population in cities, because of the ease with which destruction can be carried out.

He has spoken of major attitudinal changes. Such changes in attitude are in fact evidence of the pressure generated by the growth forces.

I would like to question the idea that 3 percent of the population are feeding the country. One must look at the entire agribusiness sector. Some 30 percent of all business activity is involved in getting food on consumers' tables. We have simply reorganized how we do it. We should not count merely the number of farmers out in the field. We must count the people making fertilizer, the people making machinery, and those who are processing food. So efficiency in putting food on the table has not increased nearly as much as the popular impression would suggest.

A comment on the service sector and the knowledge sector. I think we run the danger of extrapolating those trends too far. I am skeptical about the postindustrial world as described by Daniel Bell because I think we are looking at a swinging pendulum than trends that will go on forever. The service sector and the knowledge and information

sectors are to a considerable extent engaged in producing growth and to cope with the stresses and complexities created by growth.

As growth slows down, a lot of the knowledge sector and service sectors will slow down also. Perhaps to oversimplify, we might look back a few decades hence and see that the service sector had been a kind of halfway house between agriculture and manufacturing on the one hand and unemployment on the other.

A large service sector is something a rich society can support at the peak of growth while it is readjusting. But the future trend may not be further increases in the service sector but a move back toward agriculture. We have depleted agriculture as far as we can.

A move toward increasing local stability—and I agree we must have greater local community stability to resolve our major social problems—will tend to go with more labor-intensive production.

A lot of the present service industry is coping with problems and stresses that we had best avoid rather than solve.

A restructured society along more decentralized lines suggest reversal of the trend toward a larger service section.

Senator CULVER. One of the general subjects that I would like to get your respective views on is the form of planning that would best comport with the unique character of the American political, economic, and social system now or as you see it evolving or as you think it should be evolving?

As you mentioned, Dr. Alperovitz, planning is a little like beauty. It is in the eyes of the beholder. We currently have this array of planning models, covering everything from the Soviets and Chinese to Cuba, the Swedes, the French, the Japanese, the British, and so on.

We are groping ourselves with the general recognition of the need to enhance our capacity to anticipate the future and avoid crises, to marshal resources intelligently, to make decisions on a more timely basis, and to avoid undesirable public policy implications of current trends.

Many of us are trying to grapple with how we can accomplish this in terms of legislative mechanics. Dr. Forrester talked about the need for dynamics of the whole, improving upon not only executive but legislative capacities in this area, and for greater recognition of the interrelationship of these problems.

Dr. Alperovitz mentioned the need in the first instance to correct some of the destabilizing economic factors in order to get stability at the local level and more meaningful participation in this process.

Mr. Molitor, you speak of the traditional argument of centralization versus decentralization over the years. I wonder if we can get any greater specificity by way of suggestions for our discussions.

As you know, there is pending legislation on planning that at least is a vehicle for more focused debate on this subject of evolving an American approach. How do we establish a planning process that isn't so watered down that it is meaningless? Do you have any thoughts on this?

How do we get popular participation? Who plans? How do we avoid an elitist imposition of judgments that do not command sufficient popular support and consensus in a democratic society?

Many of you have addressed yourselves to different parts of the problem. Perhaps we could take a moment to explore this idea further. Dr. Alperovitz?

Mr. ALPEROVITZ. Let me say first that I want to commend you, Senator Culver, for being one of the people in the Congress who has been pressing continuously for the role of decentralization and citizen participation in planning. I think it is the key issue of the rest of the century, and the more the better. Keep up the good work.

I will preface my remarks by saying—and again this has not been talked about even in the comments by the other panelists—that I think we are in fact going through a period where the very greatest issues of democracy are imposed and that the possibility of extreme centralization of power, combined with violence, plus repression, to say nothing of the question of international war based on resources scarcities, does pose in the fourth quarter of this century the very real possibility that is classically described in some of the literature of some American form of corporate state.

That is an extreme danger and it has to be highlighted as a first point.

As to the planning mechanisms themselves, it seems to me that there are several specific things that can be done. But I guess the way to preface these remarks is I don't believe—and I think it is very important that our public posture and understanding be set in this context—I don't think it makes sense to mislead people by planning.

The first thing to say is the kind of planning we are likely to see in the near term won't work. So that while we are for planning and while it has to be improved and increased, anyone who promises great benefits to the ordinary citizen from planning will go the way of other political or academic figures who have made promises which didn't turn out to be right.

I think we are in for a mess, and that that is the realistic judgment for a period before we get to realistic planning.

It has to be said that way because it permits people to understand the difference between pending legislation and the kinds of things that have to be done to deal with their own lines and their own concerns about their own children and where this is going to come out. Unless we face it head on, I don't know we are realistic.

Beyond that, it seems to me that there are two key requirements of a planning system in addition to facing the institutional question. It is ownership and control.

The first one is people do not believe in planning if they know that the outcomes of planning are shaped by somebody else anyway. So the first key requirement of a planning requirement that affects citizens is by God, there is some outcome that matters to somebody. Otherwise, it is a bunch of paperwork.

The linkage between planning has to be very real in terms of whether or not there are more resources for schools or jobs or transportation or tax relief in their own community that they can see as an outcome of their spending their valuable time on.

If that is not realistic, you won't get participation that is meaningful. That entails security of position. I think that is to be stressed.

The second thing is, it is possible in our judgment to use expertise in a way that sharpens specific alternatives, defines, say, three different goals in a way citizens can make choices about and tradeoff between those goals.

Here I would strongly urge that those goals be sharpened sufficiently broadly to take into account these institutional questions I am talking about.

If you are willing to talk about the priorities of a vast majority of citizens versus a company that wants to run away to Hong Kong, you can find high orders of productivity, resource savings, and waste and elimination that can be translated into reduced taxes or better medical care or better schools, if the range is broad enough. I think that is a fairly important thing to say.

People don't have to get enormous specifics of the MIT model. They do need specific choices and goals that can be debated.

We think there are things in HUD and CETA in which local planning is being done by way of 5- and 20-year projects for jobs and housing in local communities. There is evidence in your own State of Iowa and Hawaii that citizens can indeed get involved in goal setting in their own States in a broad participatory way.

That process can be strengthened by technical assistance, by developing the idea it will really matter, by giving specific goal possibility to the local citizens. So what you can imagine is a process where local communities begin saying what they would like them to be like. And you begin to aggregate the plans of local communities upward toward the national level.

Obviously in that process you are going to come out with too many demands. The question then is how you can mediate and define choices at the national level which really respect and begin the process that starts at community level priorities and finally refines itself into a decision by the legislature and the executive toward one option that works through a complicated political process of advice and consent and iteration of demand and recalculation of the experts as to what the implications are.

We think that sort of thing can be done. There are, in fact, some interesting models within large corporations, internally, in which some corporations handle the debate between the central operation and the subsidiaries. If the subsidiary wants more capital, the corporation has to make a decision. It is a streamlined decision.

It is not a mediated process in which goals are set and debated. That is the kind of thing we have been thinking about.

It really implies one other point, that the role of the legislature in this case the Congress, has to be increasingly strengthened to make these options clear that you can't depend on the Executive to define the options.

There are some precedents in the Budget Committee and Joint Committee's work that could be broadened so we really would have the capacity to lay out the options so the local Congressman or Senator can say, "Look, this is what it means for your town. This is what we are talking about," and not the abstract statistical measure that makes sense to us.

Let me go on to quite a different point which hasn't been stressed here at all but it goes to the goal-setting question. If you start at the end of what citizens can get out of it and what matters to them, our judgment is that you ought to start with five specific, very simple things, really. The sixth one I will bring in.

That is to say the ordinary family budget for most Americans is split so 75 percent of all consumption goes to four assets: food, health care, automobile, and energy. Those are the four things that matter to people in terms of consumption.

There are lots of frills. If you have the price of these basics, these necessities, be stabilized, then add the fifth one—people have secure jobs and decent jobs.

If you start at the end of goals, you start with what matters, and people find a process which commits the political process to having these outcomes, these goals, these results—stability of the necessities and secure jobs.

Then what happens in the process is instead of projecting the past, your political process lays constraints on the planning system. These are the outcomes we demand as politicians and technocrats and economic institutions. If those are to be met, it may be that the priorities of General Motors may not be one of the highest priorities to meet these things.

If you start the projection at the technical end, you very rarely get back to the simple goals people could understand. So I would add that point particularly, you clarify it in terms of things that matter to the family budget and to the local communities and start talking about planning from that end and the move up. Then you find your trade-off at the bottom of the list might mean we end up building less yachts, caviar prices may go way up, and the cost of private airplanes may go way up.

The first four necessities of the family and then the local community stability, so that is where the tradeoff really gets sharpened if you talk about what people get out of the planning process.

Enough said.

Senator CULVER. Mr. Molitor, would you like to comment on this?

Mr. MOLITOR. I have always had a great admiration for the New England town meeting brand of direct democracy. However, what concerns me more and more as I have dealt with national public policy is how the New England town meeting concept holds up. It doesn't. That is the problem. That is the dilemma. We need to find some bridges to fit people back into the political process.

I am now engaged in a study for the National Science Foundation which looks to Sweden as a precursor jurisdiction. After studying several hundreds of issues, we have noted that Sweden in many cases over the last several decades has led the United States in implementing new laws by as many as 2 to 10 years. For social welfare policy, Sweden often leads the United States by something on the range of 15 to 20 years. In consumer policy, Sweden typically leads the United States by 2 to 10 years. And so it goes.

Once a country is recognized as being the leader, being first, they often strive to maintain that position. It is kind of a bootstrap effect. Sweden also enjoys political procedures and systems aimed at building consensus. These factors aid in swift implementation of new ideas.

Particularly intriguing is the way most Swedish public policy debate is focused through the Royal Commission. Other countries also rely upon the Royal Commission and highly tout it. The Royal Commission attempts to bring together experts from different sectors

to deliberately and rationally sort through the problems. These blue-ribbon panels are largely isolated from demagogic upstaging and crass emotionalism.

Some Swedish political leaders stated that their country was ahead because they scan the world for new ideas. New ideas or proposals appearing to have potential often are the subject of inquiry and examination by Royal Commissions who determine worthiness of implementation.

The United States has been structured, from its very beginnings, into an adversarial process. The Founding Fathers found certain advantages and a lot of solace in structuring competing parts. They set up three separate but equal branches of government, established checks and balances between them, split up political power between State and central governments, and so forth. The result is a tremendous clash of power and countervailing power.

The consensus striving Swedish, on the other hand, have brought back new ideas, determined their value and implemented them. Some 2 to 10 years later, Americans still are debating the issues.

Another very significant development, perhaps the most powerful one afoot, is the social indicators movements. Efforts are underway in a number of countries—United Kingdom, Canada, Japan, France, Sweden, and others—to develop a national system of accounts to pinpoint priority areas that matter: health, education, and welfare, and so forth.

In the United States the first social indicators report was published by the White House in 1973. Another report is pending. Social indicators are a counterpart to the economic indicators. These accounts measure trends to help tell us how well we are doing. In cases where the record isn't very good, priority problems are pinpointed.

Still another useful tool for coping with looming problems is the "National Goals and Priorities" style of report which was undertaken by the White House a number of years ago. The exercise of going through our national problems and sorting out the urgent priorities so we can set some goals, can be important.

Congress, in its wisdom, has established another important institution for carefully addressing long-range problems—the Office of Technology Assessment.

Senator CULVER. Are you satisfied that the very nature of our own political process, the relatively brief term of office that characterizes most positions both at the Federal and State levels, really lends itself to this kind of long-term action?

You have mentioned Presidential goals. It is my understanding that this effort failed a few years ago because of the political discomfort that was experienced as a result of these long-term consequences and short-term political judgments.

People in my experience are properly and understandably preoccupied with their immediate concerns, and even those who are persuaded that we have to do things now in order to effect more desirable circumstances in the future realize the problems that are associated with such a view, given the practical realities of our political system.

Are there sufficient incentives for public officials to hold these long-term views, and to campaign on them?

It seems to me that if we are going to be realistic about this matter we have to talk about massive education efforts, which are effectively

stimulated through a greater amount of local incentive toward planning.

We have to instill throughout our educational system this interest in and understanding of the importance of long-range perspectives and orientations.

I was recently involved in an exercise at a particular political institute at a college, and the institute was proudly boasting about its seminar for newly elected mayors.

After looking at the curriculum, I said, "Where is the planning section?" They said, "What do you mean?" I said, "Most of these mayors were just elected and don't have much to do about the shape of their communities during the period of their service. They are really only going to be able to change the future character by the decisions they may or may not make during their tenure. Most of the time they will be wrestling with the consequences of prior judgments and actions."

This situation occurred right at a time when we had the classic case of the bankruptcy of the greatest city—which was hard to comprehend, much less experience—and we still don't seem to have sufficient acceptance even in the intellectual community of the imperative need of doing a better job of setting goals and priorities, and anticipating problems.

This does not mention the problem we encounter in the business community where it is all right for them to plan, but the suggestion that government do so conjures up visions of communism and expectations of failures.

There is now a trend where it is fashionable to say, "Government can't do anything else"; "Elect me, I have never been there on a week-end pass."

This mood is hardly conducive. We are whipsawed by the polls that show 76 percent of the people, while mouthing this trendy view on the one hand, say they want more government regulation and see the need for more government involvement in the socioeconomic system.

How do we cope with all of this? What are some of your thoughts on these problems?

Mr. FORRESTER. We may be failing to distinguish the different classes of decisions in discussing legislation versus consensus.

If one wants to take governmental action on an issue for which there is a consensus, Congress and the executive department can do something. But little action can come out of government except when there is an approximate consensus.

The debates are about those things that are approximately 50-50. If everyone is agreed, there is no debate. If everyone has disagreed, there is no point in a debate. So that government deals with the issues that lie in a rather narrow spectrum between the fully accepted and those overwhelmingly opposed.

Therefore, government in a democracy has a very narrow decision-making range. It can bias a little in one direction or another those issues in the 40-60 range of going in one direction or another.

But in the growth debate, views aren't yet formulated. A mere 5 years ago very few were raising questions about industrial growth.

Even today there is no consensus but the issues are widely enough recognized to create a debate. So, a consensus has not yet formed and the issues are not ready for Congress to take decisive action.

Congress can act to feed the consensus-making process. Congress can encourage that a rich array of insights be laid before the public. But until there begins to be a consensus, very little legislation is possible.

As just mentioned, the Swedish Royal Commission illustrates a procedure that might be useful. Such a commission is a nice blend of elitism and public consensus. A group turns over the issues, thinks about them, prepares a paper, begins to sense what the public might accept, and provides education in the process. But little happens until the consensus begins to form.

There needs to be elitism to establish ideas and make them available, but not elitism in imposing those ideas. Imposing ideas before a consensus is ready will not work.

Now, ideas about growth can be fed into public debate, but, it is not yet time for decisive governmental planning.

I am not a supporter of the planning proposals now being debated in Congress. The proposals don't address the issues deeply enough nor will they carry the public with them.

Senator CULVER. When you speak about the dynamics of the whole and about the Federal Government and private groups competing with each other and not being concerned about duplication, would you be more specific? Are you talking about modeling capabilities in both sectors competing for the more sophisticated and refined work product, or are you talking about more basic government reorganization?

Mr. FORRESTER. I do not propose that programs be planned narrowly along what I myself think would be the right approach. It would be better to plan alternative competing programs along a number of channels that various people think are the correct approaches. At this stage there is no consensus about the correct approach to major issues of growth.

Nor is there consensus about the tools that should be used to clarify the issues. Some think historical research and interpretation is the way. Some have other nonquantitative methodologies.

I hold specific views about system dynamics modeling as the way to make progress. But my real plea is for support of a broad range of alternatives. The issues are so tremendously important to the country, that any conceivable cost—which will be very little in comparison to most Government programs—while a consensus develops will be very worthwhile.

Senator CULVER. You mentioned the development of more suitable computer methods for evaluating complex systems. How do you think these methods can earn the trust of these people in political office who must make the judgments?

What evidence for example, do you have to support the validity of the national model and others? How can you overcome the understandable apprehensions and reservations about these formulations?

Mr. FORRESTER. The national model we are working on should go through a process of public education and public debate. Its impact will be in clarifying the issues and giving people a better feeling that they understand what is going on.

I do not propose that model results should be immediately adopted as the basis for laws. Policy proposals from social models should be

judged in the same way that a descriptive book would be judged in public debate—by persuasiveness of the reasons and explanations.

Senator CULVER. The models themselves wouldn't identify alternative futures, would they?

Mr. FORRESTER. They would identify futures by showing how alternative policies adopted today could lead to different futures 5, 10, 25, and 100 years hence. They sort out the feasible alternatives from unlikely hopes for the future.

One source of political failure comes from hitching expectations to goals that are not achievable. Then failure leads to disenchantment with the political system.

If there is no set of hypotheses that are acceptable today and will lead to the future we want, then that future is unlikely. The proponents of social action should at least have a set of assumptions that are consistent with getting from here to there.

Many failures come from having no set of hypotheses that will stand the test of putting them together and demonstrating whether or not they are consistent with the goals. Computer modeling is a way to test if the present assumptions can lead to our expectations for the future.

Much internal inconsistency in thinking arises because present assumptions do not lead to where we think we are going.

By dynamic modeling of social complexity, internal inconsistency can be achieved between assumptions and their consequences.

Mr. ALPEROVITZ. Just very briefly, on both something you said, Senator, and something Dr. Forrester said. I think what is the key point of all of this is my view has to do with there is no way to do what has to be done without a very long and serious educative process.

There is no way to build up citizens' capacity. There is no way to build up understanding of the issues. There is no way to build up institutional capacities. And that unless that is faced very squarely, with great candor, that there is not going to be serious change until we go through it. Then the ordinary citizen is right to doubt specific proposals.

On the other hand, if it is formulated in terms of—I use the term new progressive era—that where we are going over the rest of this century, the next 25 years—and that means your life and your children's lives—is toward something fundamentally different.

I think people, and the polls certainly show this, have a sense there is something fundamentally wrong, that no specific little program is going to deal with it. That is a gut sense revealed in the conversation or the polls.

If you speak to that, then I think people are willing to say, "I understand it takes a brick-by-brick approach and it means the Government institutions that we now find so badly run have to be totally overruled."

Pat Cadow does 2 to 3 to 4-hour interviews and finds public ambivalence. On the one hand they identify problems. They know the only place for solutions to the problems is government.

The answer there is that can't be done immediately. So I would really second Dr. Forrester on this. I would guard against promising instant solutions when the problems are in fact 25-year problems that ought to be dealt with. I think people understand that.

Mr. MOLITOR. One matter I would like to address is the way most voters receive information. It has varied tremendously over history.

Just a little more than 100 years ago the main channel of communication was the mass circulation periodical. Next, debates and fireside chats were carried on over the radio. Radio was followed by television. Now, there is another major communication mode emerging—electrical data processing and the computer. In my paper, I raised the possibility of computerized plebiscites—televised debate on an issue, followed by instantaneous referendums.

Senator CULVER. Feedback capability of television.

Mr. MOLITOR. Right. Even without cable TV there have been proposals to use the touch telephone dialing system for registering votes into a national data bank. Through such devices a very swift and instantaneous kind of feedback can be obtained from the populace.

There is another point I would like to address. I realize it is a long way off. The point I want to stress is that computers potentially can change the kinds of limitations that Dr. Alperovitz and Dr. Forrester have mentioned.

It has been proposed, for example, that people in a postindustrial society may be able to "communicate" to work, not "commute" to work. Because postindustrial workers in a knowledge/education/information-based society will be working with their minds, they could sit at home with their theoretical "black box" that connects them to electronic information grids and do their thing.

The impact of that kind of a system, if it is ever developed, will have enormous impacts. It would vastly decrease the need for elaborate transportation systems. In turn, this would decrease energy requirements tremendously.

Senator CULVER. Could I just be a little more specific. I am interested in exploring a little more with you, Dr. Forrester, your suggestion about the tradeoff between population and the standard of living, fully recognizing the intensity of the problems.

The desires of the Third World, with its short life expectancy and the incentive for large families, to assume a decent standard of living, presents more subtle variants to what our own conventional wisdom might dictate as tradeoff.

In terms of just who pays in these growth rate scenarios, I wonder if you are satisfied and confident that these elements are all factored in.

I am troubled, Dr. Alperovitz, when we talk of the energy policy projects. You mentioned three energy growth centers: historical growth rate at 4 percent a year; technical fixed at 2 percent; and zero on energy growth.

These will have different effects on the environment. I just wonder, when we talk about alternative growth policies and changes in economic growth, how they affect different segments of the world's population, not to mention our own national population.

As you know, members of the Third World see our concern for environmental controls as a threat to their own efforts toward economic development and better standards of living.

How about this question of the impact of alternative growth levels? Who benefits and who is burdened by such scenarios?

I realize it is a large subject. But I don't see anyone making that point.

Mr. FORRESTER. There is more emotion in the press and in U.N. debates than there is real insight into where many present propositions will lead.

There is an underlying ethic that there should be equality among all countries, among all people. But when one examines the means whereby equality would be achieved, namely, striking the same balance between population and resources in all countries, equality is soon seen as equivalent to loss of freedom. Equality precludes the freedom to choose population policies.

In that context, equality may not in fact be wanted. Nor is there evidence that we have international forces capable of producing equality.

Population density versus standard of living involve a set of issues that will be handled quite separately and with quite different outcomes in different countries. People are causing a delay in facing the issues by talking about unified solutions.

I believe there won't be unified solutions. By implying that solutions will come from the outside, we become instrumental in keeping many countries from going ahead on their own to solve their problems.

Looking for external solutions goes in both directions. The industrial countries think that their resource problems will be solved from the underdeveloped countries. Underdeveloped countries think support for their population will come from the developed countries.

Sufficient demand on the environment is being created everywhere that there is almost no sector whose problems can be solved by others. They all are consumed by their own problems.

Each country must come to terms with its own growth problems, its own economic problems, and its own population problems. Some countries are in a better position than others to a short-term solution. In the long run the same avenues are open to both.

I agree with the earlier comments that in the United States the population versus standard of living issue probably lies beyond the 20-year point.

The resolution of growth issues inside of 20 years lies in such steps as making less use of energy. I agree with those who say that cutting our energy consumption in half probably would have little effect on the quality of life in the United States.

But now is the time to look at the long term. Otherwise, 25 years from now will have arrived and no foundation will have been laid for dealing with the issues.

The growth debate is a debate about how to balance the short run with the long run and not neglect either. In the past we have been neglecting the long run by maximizing the short run.

Past emphasis on short-run benefits at the expense of the long run is a principal reason for present problems. There is no danger of over-stressing the long run. There are plenty of forces to keep us focused on the short run. Anything we can do to emphasize the long run will be important. There is no danger of a society giving too much stress to long-run issues. But many institutions have collapsed from yielding to short-run expediences.

Mr. ALPEROVITZ. Just on some of the relationships I think are important within this country and the emerging context starting yester-

day, if you like, that I would really come back to stressing goals that are citizens' goals as a way to deal with the problem.

Again, if you go back and take energy in the family budget. If you say that the goals should be to stabilize a basic necessity on the amount of energy for the family, that is something people understand very well; because if that goes up, if the cost of heating your home in Maine or Iowa or Wisconsin goes up, that means your food budget goes down.

Stabilizing that is the way to set a constraint against the technical and institutional forces. It is a clear political constraint and demonstrative constraint. This is the outcome.

If you add that to, we want security and decent jobs as part of the planning outcome, then what will happen, it seems to me, is you force several of these overtime, but starting at the democratic point of view. That is to say, there are going to be costs if you stabilize the family energy budget. We are seeing it already in the various proposals for block grants of energy at low cost or free cost to various families; that those are going to be picked up someplace else.

There is legislation to grant tax incentives and grants to utilities. The question is whether or not you started there and force the outcomes up against who benefits from that.

If you start at that end of it, you then move yourself toward requiring it. If you start the other way and talk about all of the factors, the public never quite has a handle on what matters to the citizen.

The other end of that has to do with the resistance of change, which rightly comes from people whose jobs are affected. If you are asked; and the way in which we planned the recent energy crisis was to impose exceedingly high costs on the vast majority of the population.

It destroyed the economic lives of a very small percentage. It dislocated workers in Detroit, dislocated manufacturers and small businessmen who have supplied the auto manufacturers. We dislocated and destroyed various communities as part of our plan to deal with energy.

Rightly those people are upset, and so would anyone. You find the same phenomenon in environmental fights or defense industries.

The critical capacity is to move to the issue of being able to stabilize the job of the person who is affected so if he stops making big cars on Friday, Monday morning he is going to be making mass transit vehicles. If he stops making bombers, he knows he has a real job, not a public-service, low-paid job, that makes sense.

So we can't in a way look to energy unless your planning system has that capacity to put the job back in. If you start from constraints on the four necessities stabilized and decent jobs stabilized, you back yourself right into what it is that the planning system should provide for the ordinary citizen, and you are right into institutional priorities. So that is the way I go into it.

If you take the obvious technical solutions to the energy problem, the Ford report is minimal, in my judgment. They took a very moderate course. They took no account of the emerging other crises in the economy. This is a small-sector analysis.

But if you look at what terms could be done, the technical solutions are self-evident. There are many things that could be done if you do it in terms of public understanding.

Senator CULVER. Mr. Molitor?

Mr. MOLITOR. I would like to comment on your question with respect to population. As in many of these matters, it is perspective that governs whether the outlook is optimistic or pessimistic.

I am impressed by Buckminster Fuller who poses the following statistics implying man's numbers are manageable and that the population explosion is overstated. Fuller says man lives in "scattered patches covering less than 5 percent of the Earth's surface"; that "all the cities of our planet cover sum-totally less than 1 percent of the Earth's surface"; and that "megalopolises cover less than one-half of 1 percent of the Earth's total surface."

Dramatically making his point, Fuller contends that as of 1965, "all humanity could be brought indoors in the buildings of greater New York City, each of us with as much floor room as at a cocktail party." That is one cocktail party I would hope to miss.

An even more important point I want make is that there are tremendous "natural adjusters" within the system. If we take a look at population, I am impressed by U.S. family size changes, which have decreased substantially as you indicated, Senator.

In 1776 the number of children per family in the United States was eight. Then down to six in 1850, to four in 1900, to three and three-tenths in the 1930's, to two and seven-tenths in 1968, and down to two in the 1970's. Other advanced industrialized countries have experienced similar declines. Fertility rates are down. The "pill" and simple contraceptives find new approval. Abortion is up very substantially. Postponed births, down-scaled birth expectations, and a whole series of other demographic factors indicate that maybe we have reached a natural leveling off point.

Senator CULVER. I anticipate that you, Dr. Forrester, would like to speak to that question. Maybe you can address it in the context of the last question that I have.

In "Limits to Growth," five basic factors that limit and ultimately determine growth on this planet were identified: Population, agriculture production, natural resources, industrial production, and pollution. Would you add to this list or change it today? Maybe you would like to focus on the population issue, too.

Mr. FORRESTER. We should look upon "Limits to Growth" as a first cut at the problem. Today I would add social stresses as a major basic factor because social stresses are coupled very closely with population crowding, and environmental limits.

The "Limits to Growth" book was appropriate to its time, but it doesn't cover all complexities of the issues ahead. The public wants to come to a new understanding of complexity. I am greatly encouraged by the extent to which these issues are already springing up in high schools, certain undergraduate programs, even as far down as the primary schools. New educational programs are helping to show fundamental social dynamics like understanding the way short-term advantage may lead to long-term disadvantage.

Regarding interrelatedness in systems there is thinking all the way down to the high school level.

One of the great challenges of the next 10 years is to make available material about growth and alternative futures that can be debated at every level in the society. Issues of growth and the environ-

ment will still be with us when students now in high schools and elementary schools have reached a position of voting and of influence.

We must take a long-range view. I don't see the answers in instantaneous reactions to television polls or electronic feedback. I see a much longer range interest on the part of the public to really understand and not just to take the instantaneous feeling of today and then act on it.

There is a growing realization short-range views do not chart a smooth road to the future. The second phase of the growth debate will be aimed primarily at gaining a better understanding of what present actions leads to a desirable future.

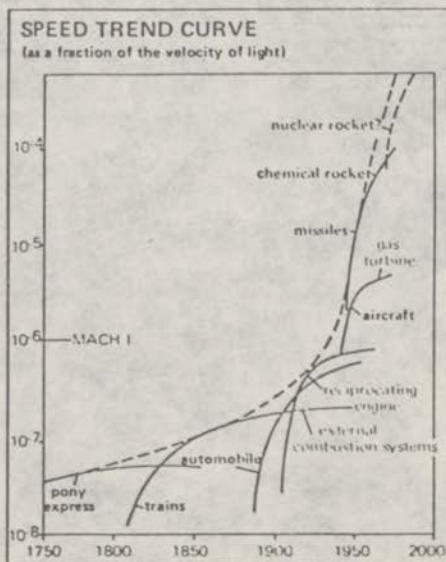
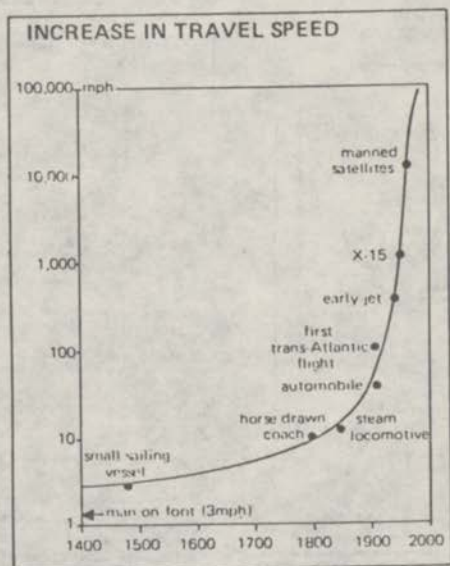
Senator CULVER. I want to thank each of you for your participation this morning.

There was a request by Mr. Molitor to have certain graphs and an excerpt from the book entitled, "Guide to Decision: The Royal Commission" included in the hearing record. Without objection, that is so ordered.

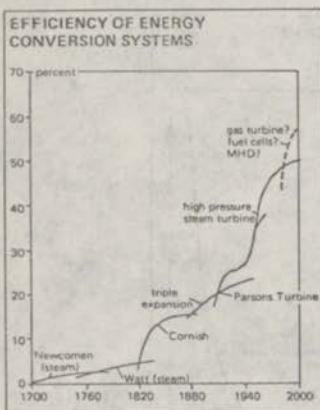
[The material referred to follows:]

INCREASES IN MAGNITUDE

Speed of Travel



INCREASES IN MAGNITUDE — ENERGY EFFICIENCY



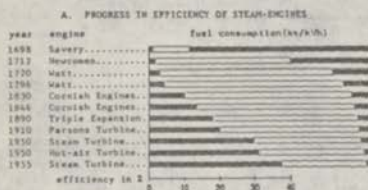
OVERALL EFFICIENCIES OF STEAM ELECTRIC PLANTS

Fossil fueled plant*	36 to 40%
Proposed fossil fueled plants with MHD topping cycle**	53 to 59%
Present light water nuclear reactor plants***	30 to 32%
Proposed advanced nuclear reactor plants	39 to 42%

*Approximately 15-20 percent of the waste heat from a fossil fueled plant is discharged via the stack and the remainder is discharged via the condenser to the cooling water stream.

**MHD stands for a new method of producing electricity called magnetohydrodynamics.

***Essentially all of the waste heat from a nuclear plant is discharged via the condenser to the cooling water stream.



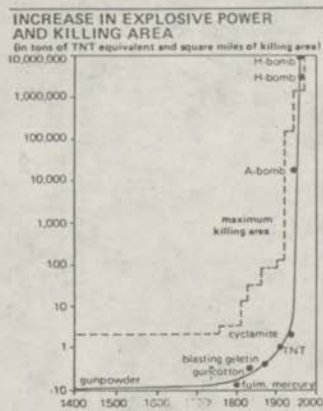
A. "The left-hand side of the diagram gives the efficiencies, the right-hand side the fuel consumption, which is inversely proportional to the efficiency."— R. Thiering

B. OTHER ENGINE EFFICIENCIES

engine type	efficiency in %
Steam Locomotive.....	1
Automobile Engine.....	12
Raw Jet (at 1,000 m.p.h.).....	21
Reciprocating Aero Engine.....	25
Turbo Jet (at 40,000 ft.).....	14
Gas (general).....	2
Steam Locomotive.....	12
Steam Turbine.....	38
Fuel Cells (potential).....	47
Hydroelectric Turbine.....	8

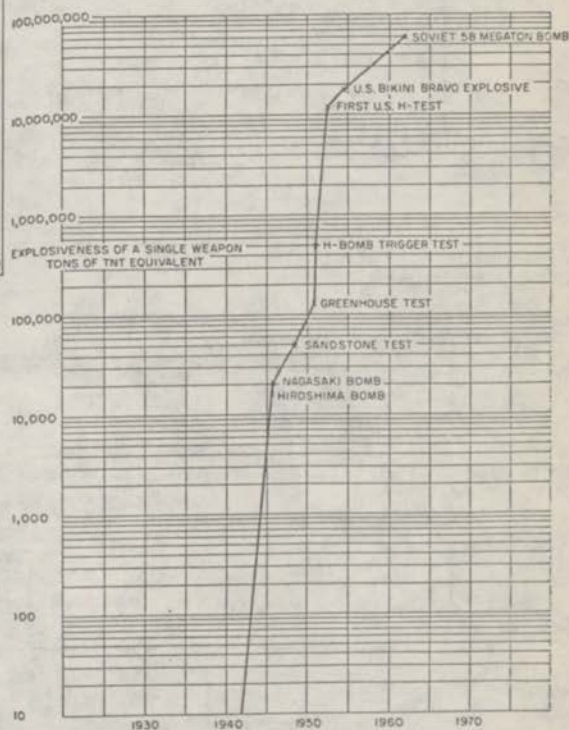
INCREASES IN MAGNITUDE

Explosive Power & Killing Area

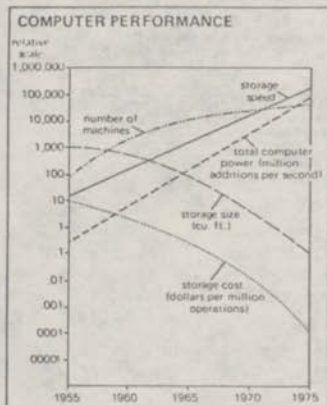
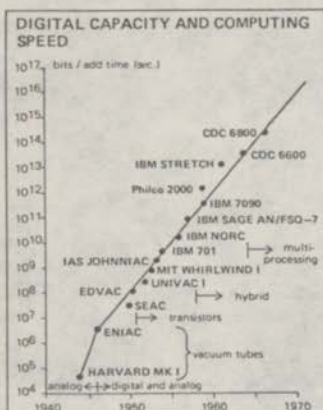


Nuclear Weapons

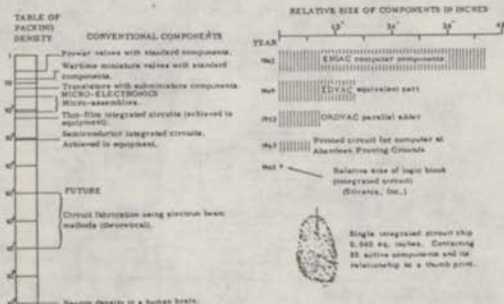
THE GROWTH OF WEAPON POWER



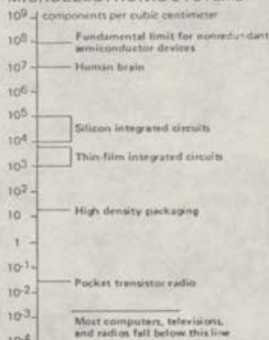
INCREASES IN MAGNITUDE -- COMPUTERS



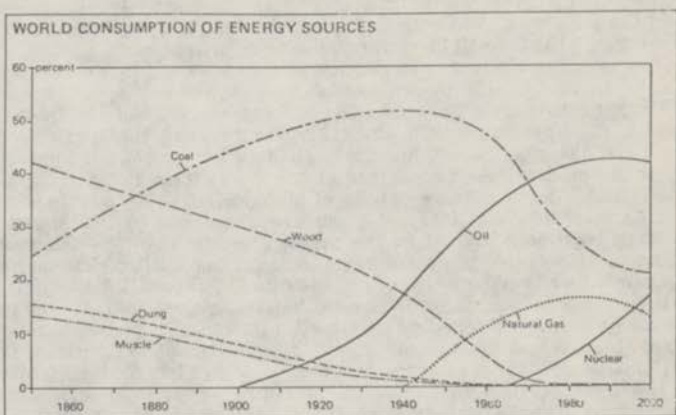
TREND TOWARD MINIATURIZATION
(maximum performance per pound of unit resource)



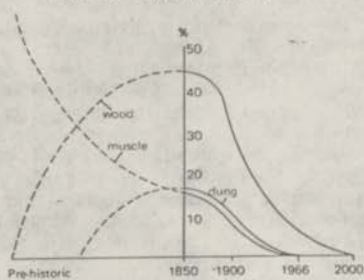
PACKING DENSITIES OF MICROELECTRONIC SYSTEMS



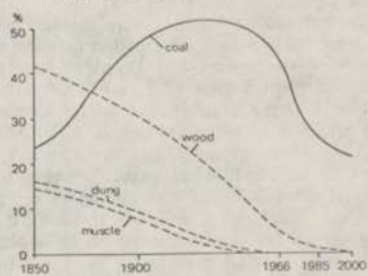
ALTERNATIVES -- ENERGY SUBSTITUTIONS



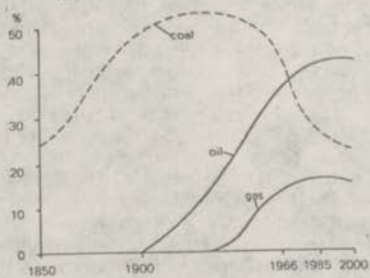
TRADITIONAL ENERGY SOURCES



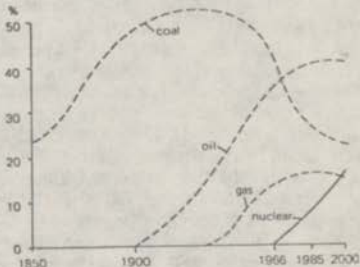
THE RISE OF COAL



THE RISE OF OIL AND GAS



THE RISE OF NUCLEAR ENERGY



10—CONCLUSION

At some point in the handling of societal problems some persons or some process must be trusted to certify facts and to make judgments on which action will be taken, or there will be tyranny, anarchy, or schism.

Review now the character of the Royal Commission. It incorporates in social structure the insight that no one person, no group from any single class or social or economic stratum, is capable of total perspective, has the qualities of temperament, the knowledge, and ability, to comprehend the totality of a societal problem. It has a balanced, not an individual or segmental, approach to problems; it juxtaposes relevant points of view to attain not an impossible "non-perspectivistic" picture but a new level of objectivity. Its members are of unimpeachable integrity, and most of them are distinguished leaders in their field. They have least self-interest in the problem before them, yet they bring understanding of important group interests before a mediating chairman. The Royal Commission has impartial expert assistants. It taps all important sources of knowledge. Its cross-examination and other techniques embody due process. It is independent and relatively free of time limitations. It derives strength from its political linkage and can rise above the restrictions of that origin. It has a congenial matrix of other structures and norms. And it has a long history of service.

In the light of that character it certainly appears reasonable to ask what other persons, what better process, could a society use to arrive at a more trustworthy guide to decision?

Royal Commissioners are obviously fallible, unable to escape their prejudices or transcend their intellectual capacities. Hence a certain proportion of their judgments may be found inadequate or erroneous. But this would be true also of any creative genius, any inspired group, any other regularized process of decision. From experience with single rulers, democratic assemblies, and elites of all kinds, history combines with modern knowledge to point the superiority of the processes embodied in the Royal Commission to achieve year after year and generation after generation trustworthy solutions to difficult social problems.¹

There is no conflict here with social science. This discipline seeks to develop a body of knowledge about social interaction which, presumably, might then be applied to practical problems to get an objectively valid solution. Where the knowledge so far accumulated in this pursuit applies to the problem of a Royal Commission, it will normally be communicated by social scientists serving as members, staff employees or consultants, or expert witnesses.

Since this knowledge rarely points to the unchallengeable solution but a decision must nevertheless be made, where is the society to find the most reliable judgment? If fallible human beings lacking objectively proved knowledge (though if this is obtainable the Royal Commission can get it) must still make portentous decisions, the safest guide for the society would appear to be the Royal Commission—despite the occasional, inevitable lapses from ranking performance.

If this is true, the more widely and the more thoroughly it is understood the better for the society. If this superiority is not recognized, and judgments are delivered, from any source, that conflict with those of a Royal Commission, on what principle do citizens and blocs and political leaders choose? On the basis of their own predilections? On the basis of their own particular interests? If the conclusions of a Royal Commission, a political party, a newspaper, a special-interest bloc, a well-known scholar, a private research group, a Parliamentary division, are all regarded as of the same character, there is no standard of reference, no principle of rank or choice, in the babel of conflicting judgments. No one knows what the operative facts are: no one knows how to evaluate the differing judgments. Policy and social direction are then usually at the mercy of the most vocal, the most politically and economically strong.

This is certainly not to suggest that criticism of a Royal Commission, or disagreement with it, always represents ignorance or fanaticism. If a Government violated the norms by appointing incompetent or biased members or by slanting their terms of reference, it would be a public duty to criticize the Government.

¹ In this Conclusion the term "Royal Commission" may be taken not as an exclusively British mechanism but as a generic term for the ranking investigatory and advisory body, in any society, whose standards approximate those of the British Royal Commission.

If a Commission itself failed to handle its problem in a professionally competent manner it would certainly be open to just criticism.

The "truth" or validity of Royal Commission findings, in sum, is not to be taken as infallible but as presumptive and comparative. Its descriptions of the segments of the social and physical worlds relevant to a problem are more accurate than would be found elsewhere. Its evaluations of facts and judgments and its consequent prescriptions are, if implemented, more likely than evaluations and prescriptions from other sources to lead to an adjustment to some situation that would be to the best interests of the total society.

It follows that unless the norms have been violated, by the Government in appointment or by the Commission in procedure, anyone undertaking to dissent from the findings of a Commission has a heavy responsibility. He must clarify the relation of his dissent to the Royal Commission process. Otherwise he is in effect claiming that one viewpoint of a problem is closer to reality than the multi-perspective arrived at in the frame of the Royal Commission. It is precisely because the full import of the Royal Commission in its structural relationships is not understood that editorialists, commentators, and representatives of one or another group often address the public as if it should accept the individual critic as wiser than the collective Commission.

No one would advocate irrational reverence for any set of persons or any decisional process. No one would demand that those whose strongly held beliefs—moral, religious, political, or economic—are not confirmed by a Royal Commission should bow down in submission and forthwith abjure their beliefs. Let such advocates continue to press for broader acceptance; a free society is the better for competition in ideas.

But what can justifiably be urged is a careful comparison of the types of persons and the procedures that deliver the findings of the Royal Commission with the persons and methods and conclusions of political parties, the civil service, private blocs, newspapers, or any other organizations or individuals in the society. Then a rational judgment may be made as to which set of results is likely to be most accurate in terms of objective reality, or most valid in terms of most advantage for the largest number so far as it can be known at the given time.

In judging this mechanism it is important to see it not alone, in a vacuum, but as it is linked with other structures, particularly Parliament and the Government.

Royal Commissions stand apart from the body politic, whose members comprise the citizens affected by Commission recommendations and the agents for their implementation. Commissioners are not elected by citizens. They disband on completing their work. They are not held accountable for the results of their advice.

Herein lies the related function of Parliament and the Prime Minister. These elected leaders express the country's choices. They are responsive and responsible to all the citizens and, in a sense, to representatives of the many special-interest blocs into which citizens divide. They have final authority for action. It is they, therefore, who have the function of taking the balanced, longer-range, strategic directives of the Royal Commission and effecting them tactically as far and as fast as possible, while maintaining social order or ensuring orderly social change.

They must carry along all the extremist groups and individuals to whom the Royal Commission has no accountability. But the extremists are the fanatics, the half-blind of myopia. They are often able to prevent full immediate implementation of Commission directives. If Parliament and the cabinet (some of whose members may themselves be extremists) did not intervene between the Royal Commission and these groups, policy might get so far ahead of what these groups would accept that only force (stronger than Statute Law by itself) could gain their compliance.

But force, even for a right policy, has quickly reached limits in aiding orderly progress or stability or even speed in social change. There is, unhappily, too often a vital distinction between the sovereign intent that "Right be Done" and the timing of this doing via the legislative, executive, and judicial arms of that sovereign will.

Final policy must be set by persons accountable to those affected by it. The role of the Royal Commission, when called on, is to help ground that policy in reason and justice, to help point the strategic direction in which that policy will take the society in response to never-ending challenges of what ways to main-

tain, what changes to make, how to improve efficiency, or how to achieve greater equity.

The Royal Commission, of course, is hardly the only source of wise decision among all the writers, scholars, research agencies; the press; the civic, economic, social, and government organizations; and the political parties in any complex society. But when among all these voices there is uncertainty or controversy about what some final decision should be, experience holds up the Royal Commission (with counterpart committees) as the best and most reliable guide yet devised. The more fully this is recognized, the more quickly can the "Right" of Royal Commission directives actually "be Done" in policy.

Its functions do not end there. The Royal Commission is not a secret group furnishing its guide sights as confidential intelligence. By the character of its members and their methods of operation it helps induce voluntary acceptance of its directives. By enlisting the focused contributions of able citizens otherwise outside the decisional process it furthers the wise demonstration of governance. By its public hearings and reports it widens social communication and increases the understanding of large numbers of citizens.

Utopian constructs are free from the perversities of human nature. The Royal Commission has operated for generations in the very intractable world of reality. Its achievement is therefore the more remarkable, and could be even greater were its rationale more clearly and widely understood.

CHART 1

FUNCTIONS OF THE ROYAL COMMISSION

Purposes of government appointment	To help overcome problems or obstacles or deficiencies -		Consequences intended or latent
	Of citizens or blocs	of government	
When government unable, or unwilling, to assume sole or immediate responsibility for a decision: 1. To resolve policy uncertainty or disagreement. 2. To gain support for a policy. 3. To overcome distrust. 4. To avoid premature commitment; to satisfy agitating group.	1. Are outside decisional process. 2. Are indifferent or uninformed or confused or with narrow perspectives. 3. Refuse accommodation of conflicting interests, or seek to impose a minority view. 4. Perform functions inadequately.	1. Does not include all able citizens. 2. Is too busy. 3. Has limiting organizational perspectives. 4. Is partisan. 5. Self-interest (fear of political damage or loss of office inhibits). (a) Self-criticism and self-correction of structures. (b) Leadership initiative.	1. Secures facts, makes value judgments, provides policy directives. 2. Approximates equity in balancing conflicting interests. 3. Provides operational audit and correction of structures. 4. Co-opts additional intelligence. 5. Educates, widens two-way social communication. 6. Extends democratic controls and self-governance. 7. Aids social control and voluntary acceptance of decisions. 8. Increases respect for leadership (?). 9. Increases morale and self-respect (?). 10. Guides social direction.

SUPPLEMENT

THE ROYAL COMMISSION IN THE UNITED STATES

No other country has produced anything comparable in effectiveness to the Royal Commission of Great Britain as an agency to which appeal can be made for a definitive determination of controversial facts and for a trustworthy judgment on a complex public problem. It would therefore make a most enlightening study in cultural borrowing to examine what countries have chosen to use the Royal Commission, what countries have not, and why not. In countries—in Africa, Asia, Latin America—that have not yet developed efficient administrative departments the mechanism should have the added usefulness of pacing emerging civil services, as it did in Britain in the 1832 reform era.

Such a survey of foreign experience is beyond our scope here. Some preliminary consideration is possible, however, of the situation in the United States.

PRESENT AMERICAN ADVISORY BODIES

As in Great Britain, individual departments in the United States Government have come increasingly to use advisory bodies, permanent and *ad hoc*. The Department of Agriculture, for one, had 50 in 1955 as against only four in 1938, when there were under 100 in the entire federal government.

These committees or boards range in size from two to several dozen members, most of them outside the government and usually representative of the various interests affected by the appointing department. They are used mainly to get outside advice, to test ideas, or to help secure public support. During the 1959 steel strike, for instance, Secretary of Labor Mitchell set up a group to study the labor troubles in this industry.

Investigatory and advisory bodies originating in the legislature have been used very extensively in the United States, but with nothing like the nice discriminating relation of tool to problem with which the British have used the Select Committee or Tribunal of Inquiry.

The Senate has 16 standing committees, each dealing with a major area of government, such as Foreign Relations, Armed Services, Government Operations. While these rarely conduct investigations themselves, they frequently appoint subcommittees for this purpose. The chairman will be a member of the parent committee, which will also furnish other members. These bodies are strictly bipartisan, membership being in proportion to the strength of the parties in Congress. The subcommittees then will hire outside personnel to help conduct the investigation.

If the problem does not fall easily under the jurisdiction of any of the standing committees, the Senate may appoint a Select Committee. Or if the problem is thought to be a shortrange one, it may appoint a Special Committee to Investigate Organized Crime in Interstate Commerce.

The House of Representatives also may appoint investigating bodies, of which in recent years perhaps the most publicized one has been the House Committee on Un-American Activities. Since the Second World War, however, the Senate has dominated the field of governmental inquiry, with the McCarthy Subcommittee on Investigations (of the Committee on Government Operations), the Subcommittee on Internal Security (of the Judiciary Committee) and the Kefauver Committee. All these committees and subcommittees have full subpoena powers.

There are two chief public purposes of Congressional Investigating Committees. One is to check the performance of executive agencies and the expenditure of government funds. The other is to determine if a problem exists which may call for legislation, and then to develop information about the problem necessary for proper legislation.

Congress originates other investigating and advisory bodies. Sometimes it collaborates with the executive branch, as in the Hoover Commission on Organization of the Executive Branch of the Government, the first one set up in 1947, the second in 1953. Congress passed the enabling legislation. President Truman appointed four of the twelve members, including the chairman, former President Hoover. The Speaker of the House of Representatives appointed four, and the President Pro Tem of the Senate appointed the other four.

Sometimes Congress collaborates with private groups. Thus its Mental Health Study Act of 1955 authorized a non-governmental Joint Commission on Mental Illness and Health, created under the leadership of the American Psychiatric Association and the American Medical Association. The Commission was composed of 45 members representing 36 national organizations in the fields of medicine, hospitals, and education. Federal funds totaling \$1,400,000 were granted, and private donors contributed another \$132,000. The funds were administered by the National Institute for Mental Health.

The executive branch of the government also creates advisory bodies. Authorization may come from a general grant of power by Congress, such as the National Industrial Recovery Act, under which President Roosevelt set up, for instance, the Committee on Economic Security in 1934. Or the authorization may be specific, as when Congress in 1929 authorized the Wickersham National Commission on Law Observance and Enforcement and paid its costs, while the President named the members.

The President can also create advisory bodies by Executive Order alone, his authority for this deriving from his right to create cabinet committees, his emergency powers, his authority as Commander in Chief or as chief agent in foreign relations. So President Truman set up in 1951 a nine-member Commission on Internal Security and Individual Rights, with Fleet Admiral Chester W. Nimitz as chairman.

The chief difficulty with Presidential Commissions lies not so much in any lack of Presidential authority to create them as in finding a source of funds to pay their expenses. In 1909, in a rider to the Sundry Civil Act of that year, Congress, in reaction against President Theodore Roosevelt's commissions, prohibited the use of public funds for any commission, council, or similar body unless its creation was authorized by law. This law is still in effect, and, though it does not prevent the President and cabinet officers from creating such bodies, it does make them hesitate to ask Congress to meet the bill. The Roberts Commission on Pearl Harbor, for instance, was set up by Executive Order. Congress gave it subpoena powers; and it was paid for by Emergency War Funds. When President Eisenhower appointed his Commission on National Goals in 1960 the funds came from eight private foundations.

The chief public purposes of Presidential Commissions are to secure information on which the President can base policy or recommend legislation, to crystallize ideas and stimulate public interest, and to investigate administration of executive departments.

The United States also uses advisory bodies on the order of National Conferences, such as President Eisenhower's White House Conference on Aging. During his tenure President Eisenhower called sixteen of these Conferences. These publicize a problem but rarely have much influence. They are very large in membership, diffuse and mixed in responsibility, and reports are very general. They have sometimes brought concrete results, however, such as the first of the decennial White House Conferences on Children and Youth, which led to the establishment in 1912 of the United States Children's Bureau and to enactment of child labor laws in several states.

In addition to all these bodies having their origin in one or another branch of the government, there are private investigating and advisory groups, which sometimes get wide publicity and even compete with governmental bodies. The 1956 Rockefeller Brothers Fund studies made recommendations in the same area of foreign policy and defense as did the Gaither Committee appointed in the spring of 1957 by President Eisenhower to make a study of defense efforts for the National Security Council. In April 1961 Robert M. Hutchins, President of the Center for the Study of Democratic Institutions, announced a two-year study of the character and moral and ethical attitudes of Americans.

LIMITATIONS OF PRESENT STRUCTURES

There is thus certainly no lack of variety in American advisory bodies. However, though some in each category have had beneficial results, none of these devices really approximates the British Royal Commission or has even established any priority in respect or effectiveness. Indeed, there are serious criticisms of all of them.

It is virtually impossible for private advisory bodies to match the prestige of public bodies. Departmental committees, Congressional Select and Special Committees all deal with minor or more specialized short-range problems and hence are of secondary rank even if they operate properly. There remain the Congressional Investigating Committees (or subcommittees), the Presidential Commissions, and the Commissions created by some joint effort of Congress and the President, as the chief American mechanisms for investigation and advice.²

Confusion and contradiction mark most Congressional Investigating Committees. The legitimate purpose of appointment—to determine if some problem requires remedial legislation and, if so, what kind, or to probe executive agen-

² See for example: Alan Barth, *Government by Investigation* (New York: Viking Press, 1955); Telford Taylor, *Grand Inquest: The Story of Congressional Investigations* (New York: Simon and Schuster, 1955); *University of Chicago Law Review*, Spring 1951; Carl Marcy, *Presidential Commissions* (New York: Kings Crown Press, 1945); M. E. Dimock, *Congressional Investigating Committees* (Baltimore: Johns Hopkins Press, 1929); E. J. Eberling, *Congressional Investigations* (New York: Columbia University Press, 1928); M. N. McGeary, *The Development of Congressional Investigative Power* (New York: Columbia University Press, 1940); Edward T. Chase, "The Longest Way from Thought to Action," *The Reporter*, June 22, 1961.

cies—is often mixed with the desire of Congressmen for public attention. This is no mere whim. The relative lack of solidarity of American political parties, the uncertainties of party support for individual senators or representatives, make headline-seeking almost a political necessity. And few opportunities for national attention equal the hearings of an investigating committee. Also, the legitimate purpose is often mixed with the partisan desire to damage political opponents. These influences invariably distort membership, procedure, and findings.

The membership of Congressional Investigating Committees, confined as it is to members of Congress, is hopelessly partisan and unbalanced. The members do not have the time to study problems adequately. They bring the single perspective of a party organization man, accustomed to look at problems in the light of political expediency and conditioned by the threat of elections. Absent are the perspectives of laymen, specialists, the impartial academic mind, and many others. The consequence is a structural incapacity to handle involved problems.

Criticism of the procedure of Congressional Investigating Committees has been very severe. Due process, constitutional, and civil rights of witnesses, long-standing norms—such as the right not to incriminate oneself, the right of privacy, the presumption of innocence—have been repeatedly violated. Conduct in the hearings has sometimes been a national disgrace. The committees also frequently go on fishing expeditions outside their legitimate area of investigation. The consequence is that they tend to assume functions for which they are not fitted: the exposure of wrong-doing and the development of evidence for use in criminal prosecutions, which is the proper function of the police; and the punishment of wrong-doers, which is the proper function of the courts. Their paid counsel and staff, not being civil servants on loan, tend to develop a vested interest in prolonging the inquiry. Findings and recommendations are usually split, reflecting the partisanship of the members.

Many Congressional Investigating Committees have without doubt been useful in educating both Congress and the public on important societal problems. This could be done far more effectively, however, by another kind of structure and without the excesses, the corroding side-effects, the unsavory spectacles, the weakening of norms, the damage to respect for governmental processes which have also been the consequences of many of these committees. Even as they now stand, it would certainly be possible to correct these grossly improper procedures. There is no need to deny a legitimate place to these committees. But their unbalanced membership and their political party perspective make it quite impossible for them ever to achieve the competence and hence the prestige of the Royal Commission.

Presidential Commissions have no crippling inherent defects (except perhaps Congressional attitudes) that would prevent their approximating Royal Commissions. There have, however, been serious and persistent errors in their use, membership, and procedure.

At different periods, for example during President Hoover's tenure, they have been used so frequently, and unfruitfully, that the mechanism has almost been scorned. In far too many instances the terms of reference have been unconscionably broad, inviting recommendations so general as to be completely untranslatable into statutes or regulations. So, for instance, President Hoover's Committee on Social Trends in 1933 was asked "to inquire into social trends," which the Committee interpreted to mean, "to examine . . . recent social trends in the United States with a view to providing such a review as might supply a basis for the formulation of large national policies looking to the next phase in the nation's development." President Eisenhower's Commission on National Goals in 1960 had a similarly vague mandate.

Membership is usually bipartisan and has rarely been properly balanced. Where impartiality has been particularly sought, Commissions have often been over-weighted with persons from the academic world. Sometimes critics of the administration have been appointed in a clumsy effort to gain their support. Far too often, again, Commissions are characterized less by members willing to sacrifice time to the Commission's work than by those willing to accept the publicity of appointment in return for a minimum of effort.

Such memberships, as a consequence, tend to rely on their technical staffs to do most of the work, and the various studies by these staff members or consultants are published without any corporate responsibility. Rightly or wrongly, citizens have the feeling that the Commissioners just meet from time to time to frame their final and usually very general report—and the "bigger" the names

of the Commissioners the stronger this impression. The President, moreover, has the right to keep the report secret if, for instance, its findings would be politically damaging to his administration.

Advisory bodies appointed in some collaborative effort of Congress and the President have probably been the most successful. Though too many of them are bipartisan in character, some have one or more independent members, for instance the Civil Rights Commission set up the Civil Rights Act of 1957 to make recommendations in this field. The two Hoover Commissions on Organization of the Executive Branch of the Government have seen over half their recommendations implemented, and had to Commissions had more public attention there might be even more pressure to secure implementation of the rest.

It is these mixed Presidential-Congressional Commissions, then, that have most promise of development into American equivalents to the Royal Commission—if this mechanism were to be used in the United States.

CREATION OF AMERICAN EQUIVALENT TO THE ROYAL COMMISSION

There are several problems that must be overcome before this is possible, and the first and probably most serious relates to Congress. With the constitutional separation of powers between legislative and executive branches there is a built-in tension and rivalry between the two. Congress has the function of legislating, and to do that properly it must be informed on problems. And Congressmen are unable to rely on enough support in elections from their parties because of their loose structure; hence they take every possible chance to bring themselves to favorable public attention.

These facts of American political life form the basis for several attitudes of Congress. These attitudes need not follow, but as long as they persist they will be fatal to the development of any reasonable facsimile of the Royal Commission.

The first attitude is that Congress has the right, and need, to make its own investigations and that the best advice comes from its own members. The second is that unless any advisory body includes members of Congress its findings will probably be deficient or at least untrustworthy for legislative purposes. The third is that appointment by the President of advisory bodies on which Congress is not represented probably is an attempt to encroach on the legislative prerogative of Congress; that findings and recommendations by a genuinely impartial body somehow may impair Congressional responsibility for legislation—this last possibly inspired by some unspoken fear that their influence might be so great the public would demand implementation and Congress would then be just a rubber stamp. The fourth attitude is that investigations provide a legitimate (though never openly avowed) opportunity for building up individual Congressional reputations.

A second set of problems centers in the President. If Congress were willing to accept a Commission appointed by the President in place of one of its own investigating committees it would impose on the President a responsibility for understanding the nature of an effective advisory body and for meeting its standards. He must, first, use the device with discrimination, not too frequently and only on suitable occasions. It is no more possible to define a suitable occasion than to define due process. But there should be some element of controversy or uncertainty and a need for definitive findings on a subject of major importance—and a reasonable likelihood of action. The mechanism should never be used just to expose or punish wrong-doing.

The President must frame terms of reference that permit a sufficiently comprehensive inquiry but also call for recommendations specific enough to form the basis for legislative or administrative action. He must select members who are genuinely distinguished in intellect, sensibly balanced in their different perspectives, and willing to devote whatever time is necessary to make the Commission's findings *their* collaborative effort, not the work of a staff to which they merely lend their names. They must, in short, be able to inspire the confidence of citizens.

Any attempt by the President to use a Commission for political advantage, any attempt to slant its terms or to pack its members with biased or mediocre persons to secure a predesired end, would be fatal. An American President can never match the above-politics character of the British Monarch. But this does not mean that in creating a Commission he cannot subordinate partisanship to the standards of the structure, reserving exercise of his function as leader of

his party to the disposition of the recommendations of the Commission. This is what a British Prime Minister does.

The President should also be willing to release on loan any administrative official or civil servant who would be capable of serving as the executive secretary of the Commission. If there is no one suitable from that source, he should be co-opted from among those already having an established position, so that the Commission does not have to hire someone who might benefit from prolonging the Commission.

Both the President and Congress should trust the discretion of the Commission as to the funds and time it needs, and not set limits on either. The Commission should report to the President and Congress co-equally (or to the President, who would in turn transmit to Congress), and, except for some situation clearly dangerous to the country's security, neither should be able to withhold a Commission's report from the public. Both these prescriptions apply also to any succeeding administration, which should not be able to dismiss or curtail the work of any already-existing Commission. A Commission, that is to say, for the length of its existence should be accorded a rank co-ordinate with the legislative, executive, and judicial branches of the government.

This is not to propose any constitutional changes. The act of creating the Commission and the right of final decision on implementation of any recommendations amply preserve the sovereignty of the legislative and executive branches. From this position of unchallenged supremacy Congress and the President could well afford to grant this temporary or acting equality to the Commission as an important element in its authority. If the President cannot be trusted to name competent persons of integrity to a Commission, he certainly cannot be trusted with the life-and-death powers he exercises, say in military affairs. And if the best brains and balanced consciences in the country cannot, as Commissioners, be trusted not to squander time or money, who *could* be trusted?

The President should not ask Congress to give a Commission subpoena powers unless there is close to certainty that information necessary for the Commission's work would not be given except under compulsion. Commissions must rather build up a prestige which will ensure voluntary co-operation. Reliance on the genuine respect of blocs and public will also help the Commission avoid any violation of due process.

A third set of problems centers in the public, the press, and special-interest groups. The more understanding all three have of the requirements for effective operation of a supreme advisory body, the greater the likelihood of successful initiation; and, once established, maintenance of its standards should ensure its successful continuance.

It is on the President that the chief burden of initial education would rest. Citizens should give the first Commissions a chance to prove the usefulness of the mechanism and not apply to them any sense of futility or disrespect engendered from past experience with inadequately structured bodies. The press should give maximum, nonpartisan coverage to the hearings and reports of Commissions in news columns, and should accept the responsibilities of segmental criticism in editorial columns.

There are two ways in which an American equivalent to the Royal Commission might be created. Congress might pass a single Enabling Act (something like the New York State Moreland Act of 1909), which would permit the President to set up a Commission at his discretion, to name its members, and to frame its terms of reference. The Act would provide funds for the operation of any Commission but would not give it subpoena powers. These could be granted on request of the President any time he was convinced a particular Commission needed them.

This method would oblige the President, as he ought in any event, to consult unofficially with Congressional leaders to avoid opposition to the creation, membership, or terms of any Commission.

A second possible method would involve creation of each Commission by Congressional statute. The Act would be initiated by Presidential request for a Commission. Again, the Act would provide funds but no subpoena powers unless specifically requested. The President would select the Commission members and frame their terms (again in informal consultation with Congressional and other leaders), and the Act would then include the terms but not necessarily the names. This method would oblige Congress to accede to Presidential request on the same

presumptive basis that it presently accepts his choice of cabinet members. That is, it should approve except in the face of the very strongest opposition.

Neither single Enabling Act nor separate Act for each Commission should impose any restrictions on membership—for instance, that it be bipartisan or include members of Congress. Though the President might well include a senator or representative on any give Commission, his must be the responsibility for selecting the best persons regardless of source.

Neither method would remove Congressional right to create its own investigating committees, but where the President chose to create a Commission both methods would call for Congress to defer its own investigation at least until after the Commission reported. And both would require Congress to accord debate and serious attention to the Commission's findings. The fact that the findings would be entirely advisory and, even with Presidential endorsement if they secured it, would require Congressional approval for any legislative implementation would preserve the ultimate authority of Congress. Responsibility for creation, selection of members, and framing their terms of references would, however, be centered in one person, the President, and criticism of any violations of standards could then home unerringly on him.

To mark out these Commissions, especially from the permanent executive or semi-judicial regulatory agencies, such as the Interstate Commerce Commission or the Federal Trade Commission, they should be given a distinguishing title, perhaps "The United States Commission on . . ." whatever the subject. The "United States" in the title should indicate acting equivalence in rank to the Senate, the House of Representatives, the President, or the Supreme Court of the United States.

It should be unnecessary to add one further requirement for the successful development of any American equivalent to the Royal Commission. All would be in vain if the national leadership, whether from inertia, intellectual incompetence, or inability to stand up to vested interests, were consistently to ignore its recommendations. The dismal record of disregard of the rare advisory groups that have really performed well is ominous. It may be that only some disaster can overcome this habit. But it would not seem unreasonable to regard the challenges that already face the country as sufficiently stimulating to muster the best possible attack. And not many improvements in problem-solving could match the development of an equivalent Royal Commission mechanism—if, then, its findings guide decision and action.

Senator CULVER. The hearings will stand in recess, subject to the call of the Chair.

[Whereupon, at 12:35 p.m., the panel recessed, subject to the call of the Chair.]



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SUMMARY AND OVERVIEW OF HEARINGS ON THE QUALITY OF LIFE
AND THE ENVIRONMENT

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SUMMARY AND OVERVIEW OF HEARINGS ON THE QUALITY OF LIFE
AND THE ENVIRONMENT

On June 11, 1976, the Panel on Environmental Science and Technology held its third hearing in the ongoing series entitled "Choosing Our Environment: Can We Anticipate the Future?" The focus of this hearing was Quality of Life and the Environment. Senator John Culver, the Panel's chairman, made the opening remarks. He noted that the industrial era has brought with it a number of highly complex problems which threaten human existence and that society's response to many of these has caused even more complications. These problems and complications have been manifested in numerous ecological and energy crises, and as a result many people are challenging the assumption that economic growth necessarily leads to a better life. People are beginning to realize that our current and future quality of life is being determined not only by economic and technological progress but also by what man deems ultimately desirable and/or necessary.

Panel chairman Culver remarked that although "quality of life" is an ill-defined and value laden concept, there is merit in expanding on the Panel's previous hearings on national growth by exploring the issues related to "quality of life." The issues selected for examination in this third hearing included the nature and determinants of our future standard of living; the relationship between the quality of life and economic growth; environmental changes which may adversely affect our standard of living; and future actions to be taken by the Federal Government to enhance the quality of life.

The two featured witnesses were Mr. Robert Theobald, Consultant to the Northwest Regional Foundation (Spokane, Washington), author of Beyond Despair: Directions for America's Third Century and editor of Futures Conditional; and Mr. Barry Bruce-Briggs, Resident Consultant at the Hudson Institute and co-author with Herman Kahn of Things to Come: Thinking About the Seventies and Eighties.

Mr. Theobald concentrated on the idea of "improving our quality of life". His testimony was based on the concept that we must change not only our present attitudes and patterns of thinking, but also our commitments and actions if "quality of life" is to become an appropriate concept in the formulation of public policy. "So long as we are committed primarily to a job-based society, we are locked into maximizing economic growth and we cannot pay any real attention to the quality of life."

Theobald began by noting that there are many different views of the future and various intellectual positions about quality of life. Theobald's theory is that people suffer from "amondie" (i.e., they lack a world in which they can realize their legitimate goals). However, because we live in a finite universe and the society within it has to operate within the concept of "limits", we must develop legitimate individual and societal goals. To do this, we need a very different set of institutional

arrangements; once our new needs are recognized, then we can create an effective society, given our changed conditions.

Theobald next proposed four minimal value changes or shifts which he deems necessary if society is to successfully move from an industrial era, pre-occupied with "standard of living" to a communications era concerned with "quality of life". First, we need to comprehend the idea of "enough". Theobald noted that this is likely to be a difficult task, especially in a society where overspending is emphasized and encouraged. Second, we must learn to appreciate and respect diversity and recognize that difference of opinion is valuable to the development of a viable society. Third, we need to understand the importance of getting people to participate in the decision-making process. Lastly, we have to accept the fact that religious thinking and intellectual work should reinforce each other; destruction of our basic value system is inhibiting society from functioning successfully.

Theobald felt that many current trends are in direct conflict with the desired values mentioned above, and if these trends continue they may be highly damaging for the quality of life we desire. For example, he contends that the idea of guaranteed employment is bad since it can only work through ensuring increased control of the whole socio-economic system and consequently rejects the idea that people can be responsible; the general trend towards national health insurance fails to recognize the hard reality that while we hope everybody can have quality health care, we cannot feasibly provide the best health care to all. With respect to these two examples, Theobald provided some alternatives which he feels need to be considered before effective changes can be achieved. He suggests that

Basic Economic Security or guaranteed income be provided to permit people to work in ways important to them; that an income base for the middle class be established so if people lose their jobs they do not fall immediately into poverty; and that the tax system be simplified. In response to the demand for national health insurance, Theobald argues that what we need is an intelligent model for Health Maintenance Organizations which will allow us to move away from a curative health care system and will help us move towards promotive health care.

In the area of education, Theobald urges that higher priority be given to funding for citizen or adult education. He considers this a must for a successful drive towards citizen involvement which he believes is one of the most significant, most ignored, and least understood movements of our time. There are different models for citizen participation activities but the central position seems to be one in which all decisions are made by the most competent group that can be assembled. For the system to be successful, however, there should be a reasonable turnover of capable decision makers. Theobald suggests that we deal both imaginatively and creatively with the increasing desire of local groups to regain power.

To attain the quality of life that is now feasible, Theobald suggests that Congress will have to:

- reevaluate bills (i.e., full employment, national health insurance, stiffer justice, back to the basics in education) which are based on the belief that we can make the industrial era work;
- shift its thinking towards the new values and styles described above;
- learn to make decisions which take note of the complexity of the total situation of society (the reality of this point can be illustrated by the futile attempts to simultaneously achieve economic growth, ecological balance, and energy conservation).

In conclusion, Theobald stated that our existing conflicts are being heightened by our refusal to accept that others might be right in their perception of the issues. More effective policymaking can occur provided we seek new styles of gathering, creating and disseminating information which will reflect the rationale behind the disagreements which exist today.

Mr. Barry Bruce-Briggs spoke briefly and informally, referring to the charts and tables in the text of his paper. He defined the notion of "quality of life" as a bundle of values, attitudes, and beliefs which are highly correlated with occupation, education, class and ethnicity and suggested that quality of life can best be illustrated by "contrasting some of its slogans and tenets with those of the value system 'standard of living' which it criticizes and seeks to supplant" (i.e., quality of life vs. standard of living -- balance vs. progress; small is beautiful vs. big is better; reject most technology vs. embrace technology). "On the whole," Mr. Bruce-Briggs contends, "the opponents of quality of life are less

prosperous and more striving than its proponents"; "it is certainly reasonable to expect the prosperous to be opposed to further economic progress and the substitution of more quality for less quantity of life." Persons listed as examples of those most likely to advocate the quality of life notion were academics, social welfare bureaucrats, media people, corporate planners (occupation base); mainstream Protestants, Jews - reformed and secular, old Yankee elites (ethnic base); and planners, socialists, and purveyors of government studies (interest group base). The list of probable opponents included Southerners, Blacks, blue collar workers, businessmen, trade union members, and nouveau riche.

In a further attempt to define quality of life and its supporters, Bruce-Briggs pointed out that "quality of life types" seem to be identified with those who wish to avoid technological and vulgar display. Following are some examples of legitimate concerns of many quality of life supporters:

- accumulation, augmentation, and proliferation of weapons of mass destruction
- loss of privacy
- increase of government and/or private power over the individual
- acceleration of changes that are too rapid to permit successful adjustments
- loss of human scale and perspective
- growth of dangerously vulnerable centralization of administrative or technological systems

In contrast, he listed terms, most of which are predicated on a high and growing standard of living, which define quality of life for the average non-privileged American. For example:

- good health
- national security
- personal security
- employment security
- suburban environment
- potential upward economic mobility
- successful interpersonal relationships

The second part of Mr. Bruce-Briggs' testimony consisted of direct response to the questions addressed to him in the invitation to testify. The questions and a short summary of Mr. Bruce-Briggs' answers follow:

1. If present trends remain unchanged, what do you think the quality of life will be in the year 2000? This depends on who you are. If trends don't change, the quality of life will be less favorable (less luxury services, increased sharing of facilities, etc.) for the privileged order of Americans, but definitely more favorable (better health, more individual liberty, etc.) for the majority.

2. Is our present rate of economic growth advantageous? "No, if it were more rapid, we could better provide for our national security, for increased social programs, for the elimination of poverty, for aid to developing nations, and for investment in systems to reduce pollution and other environmental damage."

3. Is there a trade-off between quality of life and quantity of goods? What is the effect of this relationship on the environment? The inevitable result of a prosperous society seems to be a tendency to place little value on goods which consequently leads to the tendency to make things and dispose of them rather than repair them. This requires a supply of increasing amounts of energy, raw materials and manufactured products all of which are produced by processes which effect our environment in many instances positively but in some instances negatively.

4. What environmental changes may occur in the next 50 years which will adversely affect quality of life? The most threatening example of possible extreme degradation of the environment will come from the use of nuclear and thermonuclear weapons in warfare.

5. What are the most significant actions that the Federal Government should take to improve the future quality of life? A priority list might include:

- Prepare better defenses against nuclear attack.
- Better defend citizenry against crime.
- Continue programs intended to ease the route of most Americans in upgrading the quality of their lives by moving to suburban or lower density communities.
- Continue Federal programs intended to ease Americans in maximizing their mobility (i.e., build highways to assist suburbanization).
- Take coherent, systematic steps to bring in safe, politically reliable and environmentally sound energy sources.
- Systematically review all existing environmental standards, many of which would now appear to be unnecessarily limiting the liberty of individual Americans and cutting into their standard of living and quality of life.

CHOOSING OUR ENVIRONMENT: CAN WE ANTICIPATE THE FUTURE?

Quality of Life and the Environment

FRIDAY, JUNE 11, 1976

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION,
PANEL ON ENVIRONMENTAL SCIENCE AND TECHNOLOGY,
Washington, D.C.

The panel met at 10 a.m., pursuant to recess, in room 4200, Dirksen Senate Office Building, Hon. John C. Culver (chairman of the Panel) presiding.

Present: Senator Culver.

OPENING STATEMENT OF HON. JOHN C. CULVER, U.S. SENATOR FROM THE STATE OF IOWA

Senator CULVER. The subcommittee will come to order.

I want to take this opportunity to welcome you to the third hearing by the Panel on Environmental Science and Technology in its ongoing series entitled "Choosing Our Environment: Can We Anticipate the Future?"

The Panel, which is a factfinding rather than a legislative body, is exploring in this series the importance of long-range forecasting in public policy. It is expected that these hearings will also identify emerging issues of interest to the Environmental Pollution Subcommittee.

There is, I believe, an implicit recognition that if we plan for the future now, we can, to a certain extent, determine what circumstances we might experience in the coming years. These hearings will hopefully facilitate our anticipation of future problems and demonstrate how we should shape our public institutions in order to make them more responsive to our needs.

The first hearing in this series was held in December 1975 and provided an introduction to the general subject of futures analysis. We examined the potential as well as the limitations of forecasting, the experience of the private sector with foresight provisions, and the effectiveness of forecasting in planning our environment.

In February, the second session was devoted to an analysis of the prospects and development of national growth and included a discussion of the interrelationships between economic growth, the environment, and technological innovation.

Subsequent hearings will continue our study of the important uses of forecasting by assessing the Environmental Protection Agency's analysis of future problems.

As our society has become more industrialized, it has experienced a parallel expansion of the many problems which threaten human existence. These problems themselves are not necessarily new, but their greater dimensions, the diminishing resources, and the accelerating rates of change are unprecedented.

These problems have, in turn, been compounded by the solutions which man himself has developed as responses. By shrinking physical distances, man has increased his own interdependence; by combating hunger and illness, man has increased his population; and by demonstrating his growing technology and knowledge, man has increased the demand for the so-called good life. As the expectations have been raised, man has wanted not only more in quantity, but also a greater diversity of goods and services.

As you know, quality of life is a rather nebulous concept and means different things to different people. Although it is a value-laden and subjective judgment in most cases, quality of life has traditionally been related to our economic growth. Our free enterprise system has been partially built around the assumption that economic growth implies a better life and there have often been pressures for a redistribution of income and wealth in order to improve the standard of living of certain groups in our society and the world.

Recent ecological and energy crises have challenged this assumption, and the nature of the collective perception of the social and individual well-being is receiving closer scrutiny. We are now beginning to realize that our future quality of life is not only determined by possible economic or technological progress but also by what man himself feels ultimately desirable or necessary in human terms.

In today's hearing, "Quality of Life and the Environment," we will continue to expand on our previous hearing on national growth by focusing on several aspects of the future quality of life. We hope to examine this morning the nature and determinants of our future standard of living and, hopefully, arrive at some mutually agreeable definitions of this concept.

More specifically, we will discuss, among other factors, the relationship between quality of life and economic growth, the environmental changes which may adversely affect our standard of living, and what actions should be taken by the Federal Government to enhance our quality of life.

We have a very distinguished group of witnesses before us this morning to discuss these issues, and I am confident their comments will foster a lively and provocative analysis of the prospects of our quality of life. Dr. Bertram Gross, professor of urban affairs at Hunter College, City University of New York, was planning to testify this morning before the Panel, but unfortunately he severely injured his leg in an accident yesterday and will not be able to join us.

Our first witness this morning is Mr. Robert Theobald, who is associated with the Northwest Regional Foundation at Spokane, Wash. Mr. Theobald is known as the father of the guaranteed income plan and is the author of the recently published book "Beyond Despair—Directions for America's Third Century."

To permit a healthy exchange of questions this morning, it would be helpful for each witness to limit the summary of his prepared statement to no more than 20 minutes.

The entire text of the written remarks will then be made a part of the record.

Mr. Theobald, I welcome you here this morning. You may begin.

**STATEMENT OF ROBERT THEOBALD, CONSULTANT TO THE
NORTHWEST REGIONAL FOUNDATION, SPOKANE, WASH.**

MR. THEOBALD. Thank you, Senator Culver.

It is a pleasure to be here with you. I am going to make my remarks around the questions that you asked. The text does not follow those, though in a sense, they will supplement each other. (Written statement appears at p. 294.)

The first question was: "What does the quality of life mean; why do you believe that your particular image of the future quality of life is an actual representation?" I have a feeling the question is something like, when did you last stop beating your wife? But I will try it anyway.

I believe that by quality of life, we mean an opportunity for people to develop themselves to the fullest. I realize that that is usually rather comfortable rhetoric where we say that my society would be one in which that was possible, but I believe that in order for that to be an achievable goal, we will have to significantly shift the values by which this culture runs.

I think that, first of all, we will have to move away from a culture where we are primarily interested in moreness, in growth, in saying that when you have more, you are inherently better off, as you mentioned in your initial comments, to a culture of enough, a culture where we say we need a certain amount to do the job we are doing and having more than that is as damaging to us as having less than that.

Second, I believe that we have to move away from a belief in equality, a word that has been much thrown around, but which, I think, inevitably leads, in George Orwell's term, to a world in which some people are more equal than others, and move to a belief in diversity, a recognition that people have different talents, and that the job is to make sure that those people find the jobs, the work for which they are most competent. That is a very different goal than the one behind most legislation at the present time.

Third, I believe that we must move away from a controlled society, a society in which we believe that some of us are wise enough to control other people's lives, to a communication society where we believe that people given adequate information are capable of controlling their own lives. That is a rather classic belief which, I think, we have forgotten. I love the story of the cat who kept on clawing the curtains and whenever it happened, the man got very irritated and threw the cat out. Eventually, the cat learned that the way to get out was to claw the curtains.

I think that a great many of our control systems have exactly the opposite result from what we set out to do. I think welfare is an example of how people are forced to behave in the ways that they do not wish to. We need, therefore, to move toward a society in which

communications work, and I feel that that, because of our overloaded communications system, is not the case at the present time.

Fourth, and perhaps most surprisingly, I believe that we have to move toward a religious value system because I have found out in my work on system theory that the values of honesty, responsibility, humility, love, and respect for mystery are not only nice ideals, but necessary for the functioning of the society.

I am now inclined to say that you can either see religion as primitive system theory, or system theory as primitive religion, depending on your particular set of biases. The consequences of this, in policy terms, are rather startling. I have no time to explain the conclusions I reach here but they are explained to some extent in my fuller testimony and to a much greater extent in my book "Beyond Despair." Let me run through them very rapidly.

I believe that we need to move toward a guaranteed income instead of toward the Humphrey-Hawkins bill. I think that their proposal for full employment will lead us in directions which were well expressed by Kurt Vonnegut in his book "Player Piano," where he talked about the danger of serfdom from an overplanned and overcontrolled economy.

Second, in the area of health, I believe we need to move toward health maintenance organizations rather than national health insurance. I think the breakdown of what some critics call our sickness system is extremely obvious. As you know, health care costs in this city have now gone beyond \$200 a day and the effect of national health insurance would be to still further increase the inflation rate, which is already extremely high in the health system.

Third, in the area of justice, I believe we have to face the fact that our justice system does not work, and that there is differential justice for the powerful and the powerless. We need to find ways of keeping people outside the justice system; in other words, finding ways for young people to grow up without getting caught up with the law.

There are very few ways for people to test themselves as they grow up in our very complex society and more and more young people get in trouble for doing things which we probably did when we were growing up when the culture was more open and had more space.

Finally, in the area of education, I think we have to recognize that not only is education failing to prepare people for America's third century, but nearly everybody that I spoke to knows that it is doing so. I take a poll at the beginning of my speeches and I have yet to find an audience in recent months where more than 5 percent of the audience, whether it be teachers, administrators, parents, students, believe that our educational system is preparing people for the world in which we are going to work and live.

As I said, there is no way that I can prove that my vision of the future quality of life is accurate. There are great disagreements in the field, as you are only too well aware, Senator. The only thing that encourages me, I think, to believe that it might be is this remarkable correlation between the conclusions I am reaching through the systems I am studying and the conclusions that were reached through religious thinking. I am inclined to believe that seeing how long the religious tradition is, there may be something in it after all.

The second question I was asked was: "What recent changes most profoundly affected the course of American society and have altered the expectations of Americans regarding the quality of life in the coming years?"

I would agree with what I think was implied in your statement, which is that essentially there has not been a concern about the quality of life in our society until very recently. We were concerned about the quantity of life and we said the quantity of life is the quality of life.

I think that in the last 10 years, approximately, we have become concerned about the quality of life and I think that has been borne in on us from two points of view. One of them is, of course, the ecological and environmental movement that has made us aware that there is a finiteness to the universe.

The question of what that means is still, as you know, in enormous dispute, but there is no doubt that as we look at decisionmaking, we now consider as one the elements that should go into that decision-making the environmental-ecological issue.

The second factor that has occurred to bring us up against the quality of life is the energy shortage, the fact that very few people believe that gas and oil will work for us for an unlimited period of time, although there are some people who believe that substitutes are available. Therefore, another factor that now enters into our decisionmaking is the need to conserve energy.

What we have, as I see it, is a threefold tension which we are not successfully resolving in our culture, in our economy, and so forth. We have three pulls in the system: One toward economic growth, one toward ecological balance, and one toward energy conservation.

The problems of that threefold pull can be shown at all levels in the society, but at the level of the citizen you have a somewhat strained situation where people are asked to buy cars in order to make economic growth possible, told not to run them because that uses energy, and then told that if they do run them, they should use a catalytic converter, although that increases the use of energy. People are somewhat aware that that doesn't make a great deal of sense.

At the governmental level—I will take the Federal level—you have different committees doing these three things: Several committees responsible for economic growth; several committees responsible for ecology in various ways; several committees responsible for energy conservation.

Even if each of those groups of committees works effectively, the system cannot work because the contradictions between those three goals are very large; the drive to reduce energy use does tend to reduce energy growth. So it tends to reduce economic growth, and so forth.

Therefore, there is a tension which is unresolved and which makes it increasingly difficult for the Federal Government to operate. I think we have seen this over the last 2 years and, as you will hear when I come to the answer to question three, I don't believe it is resolvable within our present governmental mechanism.

The important point I make in concluding my answer to question two is that the quality of life is an interdependent interrelation and the quantity of life is an independent relation. In other words, if you

are talking about the quantity of life, you can have a single-minded directed goal, and the whole of the governmental system and the private system can, in a sense, be single-minded about its direction.

The quality of life does not fall in that category and to deal with that you need to think about the interrelationships. None of our decisionmaking systems are set up to deal with interrelationships anywhere in our society and our crisis is coming precisely from that lack of our capacity to think things together again rather than to analyze them apart. We are set up for analyzing things apart rather than for dealing their interdependence.

The fourth question, and I would like to take it third, if you are agreeable, is: "In your latest book, you assert that social changes are created principally through citizen participation. What changes in the quality of life can be brought about by improving citizen action?"

My understanding of this point came from one of the last times I testified in Congress, when I was talking about the guaranteed income. As I was testifying, somebody came up and said, "Bob, it is a great idea, but it isn't politically feasible." So I spent some time thinking about that.

I decided that basically, in the end, citizens change the way that the country moves; that in the end, Congress votes for what people are willing to do; that, therefore, if you want to change things, you are going to have to change the opinions of the citizens.

This is, of course, a circle. The Congress has some influence on that process; but it is not by any means the only influence. If we are to really deal with these issues, we are going to deal with them, in my opinion, by reaching people in their own hometowns, and explaining to them why the energy crisis is real and how it effects how they make decisions about their own freeways.

I am encouraged by the number of cities, towns, villages that have begun to understand that a new set of forces are impinging on their decisionmaking. To use one example: in Spokane where I am working, we had a transportation hearing. It was extraordinary how many of the people who came to that were aware that the automobile in all probability was not going to be the dominant mode of transportation for an unlimited period in the future and were willing to look at that in terms of capability.

It, therefore, appears to me that if we are serious about improving the quality of life, the only way this can be done is by providing accurate information to the citizens, so that they can make intelligent decisions.

I mentioned democracy earlier. As Churchill said, democracy is the worst form of government, except all of the others. It requires a certain act of faith, or more than faith, to believe that democracy, or indeed government, is possible. It requires stupidity to believe that government is possible without accurate information.

As I look at the plight of the citizen today, trying to make sense of the garbled information that is reaching him/her through the media—I am not blaming the media, there are reasons for their failure—it does not seem surprising to me that the citizen cannot make good decisions about his life, or the direction of his community. In some way, we have got to bring these issues more clearly to people.

I think the movement back to larger-sized cars occurs because of the frustration of the citizen in not knowing whether the energy crisis is a ripoff, is something set up by the oil companies, or is real. People are saying they can't understand it. I, at least, find it difficult to blame the citizen for reaching that conclusion.

The final point that you asked was: "What are the most significant actions that the Federal Government should take to improve the future quality of life? What would be the primary effect of these actions?"

It follows from all that I have said that the Federal Government is essentially powerless—I use that word quite deliberately and as strongly as it sounds—so long as it is organized in its present way; so long as there are different committees taking different hunks of the problem and analyzing it out of different pieces of the question.

I can add, of course, to the difficulties, but it is not the central issue. The central issue involves the number of people in whose interest it is to distort the information that reaches you in order to make certain bills appear more attractive to you than they would otherwise be. This is something that happens from both the "good guys" and the "bad guys,"—depending on whoever you happen to feel is right in a particular case.

There doesn't seem to be much difference in the degree of distortion that people who are lobbying feel justified in laying on. I think we have seen that particularly clearly in the recent Proposition 13 campaign in California, where both sides were concerned to win rather than to inform citizens about the rights and wrongs of the issue.

I do not believe that much can be done until we are able to look at the issue as a whole and we are able to bring you information which is as accurate as the culture can provide. That doesn't mean totally accurate because we cannot ever do that. We certainly cannot do it at the moment because there has been a prolonged period of unconscious and conscious distortion of information.

Let me conclude by making a few suggestions as to what could be done. Number one, it seems to me that it is critical, as you are already trying to do, to enlarge the responsibilities, role and function of the Congressional Budget Committee from primarily being concerned with the accounting function and with resolving contradictions, to being concerned with understanding the issues of the short run and the longer run future. That office would be at least one place to fix responsibility for some scenario writing and some understanding.

In that case, obviously, there is a need to hire new people who will look at different sorts of information.

The second job that I think needs to be done is to enlarge the mandate or to make sure that the mandate of the Culver Commission, which is considering the committee structure of the Senate, includes looking not only at the committee structure itself, but asking fundamental questions as to whether the committee structure meets what we know about management theory.

Senator CULVER. Mr. Theobald, I will point out, I think, a very important distinction. We now have two major congressional reform activities in the Senate. One is the Committee on Committees, which is addressing the question of modernizing committee jurisdictions, and

we also have this so-called Culver Commission, which is a group of citizens looking at virtually every other aspect of our operation including the problems of anticipating more effectively future policy needs.

Mr. THEOBALD. You notice my problem in keeping things separate, since I believe in interdependence. I believe that this rethinking is important for both and in a sense, it is impossible to deal with this within committee structure. I think if you talked to management theorists at this point, we would argue that it is not possible to manage through yearly structured committees.

More and more people are talking about the need for task forces with clearly assigned tasks rather than a committee function in a sense where there is a continuing jurisdiction.

The third thing that I would talk about is a fundamentally different way of structuring information which we have been pioneering, a formal structure which we call the problem possibility network, the object of this is to develop a document on an issue which states the agreements that there are at the present time, the disagreements there are at the present time, and the issues which we should be considering. In other words, as I look at issues like food, energy, or housing, I find myself more and more confused. I look at the experts, many people whom I respect, and find them able to come up with totally different conclusions on the same set of data. It seems to me that somehow we must begin to close down the gaps between people and to discover which of the gaps are semantics and which of them are fundamentally real.

We have developed some techniques and communications technology which make that a perfectly feasible goal.

One of my long-run hopes for government in fact involves the availability of the best information on the various issues that are facing the Congress and indeed the rest of us in decisionmaking.

I cannot close without stating my feeling that we are at the critical point in our capacity to deal with these issues. I have spoken primarily about the United States. I think the crisis and the difficulties in the United States—I realize that word crisis is greatly overplayed—but the crisis in decisionmaking which to me is the central crisis seems to me to be very real, very immediate, and very serious.

If you then enlarge this to talk about world events and talk about our apparent total inability to come to grips with the issues of the developing countries, the rich-poor split, the white-nonwhite split, it seems to me that we must either begin to rethink our issues, to rethink the way we deal with them, or we can only expect a rapid degradation in the quality of life.

One of the ways I put this very bluntly is that I think 1984 in Orwell's book is not impossible. I think it depends on the wisdom of Congress, of private decisionmakers in this culture and many others as to whether we get into that situation or we achieve the higher quality of life which I believe is very much within our grasp but which I believe very fundamentally we are not successfully achieving.

Thank you very much.

Senator CULVER. I want to thank you very much, Mr. Theobald. That bell means a vote is in progress on the floor. We will now take a brief recess—about 5 to 10 minutes to make that vote. After the recess, we will receive testimony from our other witnesses. Thank you.

[Brief recess.]

Senator CULVER. The subcommittee will come to order.

Our second witness is Mr. B. Bruce-Briggs, who is resident consultant at the Hudson Institute. Mr. Bruce-Briggs is the coauthor, with Herman Kahn, of the publication "Things to Come: Thinking About the Seventies and the Eighties." We are delighted to welcome you here this morning, Mr. Bruce-Briggs, and we look forward to hearing your testimony.

STATEMENT OF BARRY BRUCE-BRIGGS, RESIDENT CONSULTANT, HUDSON INSTITUTE

Mr. BRUCE-BRIGGS. Thank you, Mr. Chairman. I am accustomed to speaking from briefing notes. I believe a copy of my statement is before you.

[The statement appears at p. 318.]

Let me turn to page 4. There are a list of charts there. (Page 322.)

As you mentioned in your introductory remarks, Senator, the phrase "quality of life" is a very recent one. I think it is most useful to give a little thought to what it means and where it came from. This will help us in achieving some sense of where we are going with it.

To my mind, I think most commentators would agree that that reflects an expansion and popularization of the romantic world view of the 18th and 19th century. This is described in chart 2. As the industrial revolution began, significant elements in the society, particularly among the aristocracy and intellectuals, did not like it at all. They considered it overwhelming the traditional religious values, traditional social values, and disturbing the social order. They also found it to be aesthetically displeasing. It was ugly. Carlyle spoke of "dark, satanic mills."

There was a sense among the established order and intellectuals that the rise of the bourgeois associated with industrialization and capitalism, was evil, that it should not be tolerated in decent society. This is a long tradition in Western thought. Some elements of it can be traced back to the Renaissance of it even.

In the turn of the century in this country, there was a progressive reaction against the more predatory excesses of the robber barons and an attempt at preserving the environment. We associated this with people like President Theodore Roosevelt, what have you, John Muir in California.

The intellectuals in the turn of the century became very bitter about the society and wrote alternatives to it. They attacked the gross materialism supposed to characterize industrial capitalist society. In this country in the twenties, we had a real turning away from the predominant value system of America by the intellectual class. They called dominant American values "Babbitry," particularly businessmen whom they considered undesirable models for society.

Sociologist Daniel Bell, made the point that nobody voted in the Industrial Revolution. It happened through a series of individual, unplanned decisions. Doubtless, had the dominant forces in the society and probably even the masses as well in 1800 or 1820, been given a choice—do you want this to happen, do you want this process to go on, do you want your churches to erode, do you want the traditional social order to collapse, they would have voted against it.

At any given time in history, most people are very conservative in that they perceive that they have certain benefits from the existing system and it is hard to convince them that the conjectural benefits in the future are going to overwhelm the ones they have today.

Of course, the privileged orders at any time in society have this sense the strongest; indeed looking at its historically, you can argue that, from the point of view of the people on the top, the world is always going to hell. Change is taking away what they have had and what they hope to have in the future.

It would seem to me that a good way to look at the quality-of-life issue or the expression of quality life by the academics, the media, and political leaders is the desire to mitigate, to slow down, or to stop history.

It is also a reflection of individual values and as I shall talk about in a second, highly correlated with occupation, education, class, and ethnicity in our society.

Let me turn to page 5. There is a chart on top that contrasts quality-of-life phrases, slogans, and ideas with another phrase we have used in this country for a very long time, "the standard of living." Most of us were brought up with the idea that progress, undefined and unspecified, was positive. "You can't stop progress" really meant you shouldn't stop progress. Other assumptions: The more the better, big is better; many American towns will advertise they have the largest water tower or the biggest farm or the longest bridge.

There are a few that advertise they have the smallest something or other, but not very many.

The concept of gross national product, which dates only from 1945, reflects the emotion very well. There was underlying the assumption that life was tough and hard, particularly the life before the Industrial Revolution, that life is competitive, the nature was dangerous, nature would kill you. The farmer has never been a great enthusiast for nature. He has wrestled his living from the soil at a terrible cost; for example, during the colonization of our plains, the terrible hardships the people endured in the early days of settlement.

According to the standard of living view of the world, further economic growth will be beneficial to mankind; economic growth will reduce poverty; technology is what makes all of this possible. We should embrace it and that economic efficiency is an extremely important thing to achieve basic social and individual ends.

The quality of life position rejects large parts of the standard of living point of view. "Progress" is a dirty word. We hear phrases less is more, small is beautiful, gross national product is becoming gross national pollution, the affluent society is becoming the effluent society and in line with the idea I talked about earlier, the belief that nature is both harmonious and also very delicate; that is, it can be disturbed, thrown off its natural track. Man should participate in nature and not try to overwhelm it.

Further economic growth will be disastrous. This, of course, is the limits-to-growth position associated with many analysts, most notably, the Club of Rome. By the way, this position has been recently refuted and I think pretty well destroyed by a book by my colleagues, Herman Kahn and associates entitled "The Next Hundred Years" in which

they argue that yes, we can grow. There is no physical limit to growth, although they are the first to admit that the terrible management problems, political problems, issues of personal happiness, and so forth, but the stuff is there; the coal, the energy, the raw materials, the food, the land, the space.

Quality of life people tend to believe that poverty insofar as it exists in this country and throughout the world should be produced by income redistribution from the preprosperous to the unprosperous. The quality of life people reject most technology, the qualification of "most" is very important. Because they do not wish to destroy everything, most of them. There are a few nuts out there, but on the whole, they are serious people. They reject certain types of technology, yet embrace other types.

I will describe some of these in a moment. They argue, finally, that economic efficiency is a specious mesh of human welfare. They look for other means, they look for social indicators. They talk about energy efficiency, rather than economic efficiency.

On the bottom of the page is chart 4, drawn in a way to make the differences between the two positions more clear and as one does when one makes a list of some sort, one has to exaggerate considerably. But this contrasts the views toward the environment of the standard of living and quality of life positions. Both agree that all human activities pollute; although different groups will emphasize different types of pollution.

The standard of living people grant that pollution is undesirable, but it is inevitable. It is a necessary part of life, rather like sin. They would argue to make a balance between production and pollution, but on the whole are willing to sacrifice some pollution for more production. They would reduce pollution through technology and they would, many of them, control pollution through tax incentives. You have all heard this argument for pollution taxes, and so forth.

The quality of life people take an almost religious attitude that pollution is intolerable. They would sacrifice production for pollution control; they most strongly advocate cutting consumption to reduce pollution. Just yesterday, I had a conversation with a very famous man, a lawyer, who claims to speak for "the public interest" on the nuclear power issue. He thought I was defending building nuclear plants which I not necessarily was, but never mind. He strongly made a case against building nuclear power plants which were dangerous for various reasons, but rather that we should cut consumption that would give us the same amount of energy. It is a reasonable argument.

But that was his solution to the same problem. The quality of life people would control pollution by legal sanctions. This is a very important point. They don't like tax incentives because they see pollution as immoral. They argue that a tax system is essentially a license to pollute and a moral society doesn't condone immoral activities.

Who are the supporters of the quality of life position as I described? These are listed on table 5. This group is the "new class" described by many political analysis. As we know, old classes were defined by family or by property or by some sort of religious credentials. The new class is defined by education. It possesses education, formal learning, verbal skills.

It is most strong, as we know well among academics and publicists. It is very interesting, however, that it is unfair to say that all academics are this or that. A very interesting study for someone who is a student of contemporary politics is the recent volume by Seymour Martin Lipset, called the *Divided Academy*. He did a massive sociologic survey of academia with fascinating results. Among other things, he found that professors who were most into quality of life also tended to be most politically liberal and have a certain syndrome or set of values. These people tend to be mostly highly concentrated among those disciplines in the academic world which require the most intellectualization and the least hard data. This is not a value judgment by Lipset, but merely the way his study came out. The people who are mostly saying "Quality of Life" clearly were according to his data, in literature, sociology, social psychology, less so in political science, less so in economics, less so in the hard sciences, and as you move into geology, engineering, business administration, you get much more traditionally oriented standard of living type group of people. It is an absolutely amazing study financed by the Carnegie Foundation.

An interesting side note is that he found one of the things which correlated mostly with the political views is the type of automobile you own. People who own GM cars tended to be conservative whereas people with foreign cars were liberal and the most liberal group was just as you would suspect, the Volvo owners.

I was very pleased to see that my own observations were supported by serious data.

Other occupational supporters were teachers, especially nonscientists, social welfare bureaucrats on the whole, professionals, especially salaried professionals, media, advertising, foundation staff, research organizations, except those who are very hard scientists and those from the military industrial complex, although they have been penetrated to some degree. Interesting, in business itself, many corporate planners and PR types and, of course, political staffs.

Senator CULVER. What does it mean if we see Jimmy Carter driving a Volvo next week?

Mr. BRUCE-BRIGGS. All social science data speak to probabilities and groups and not to individuals.

Senator CULVER. I hope we will have some easier questions for you.

Mr. BRUCE-BRIGGS. I even know a sociologist who drives a Cadillac and he does that just to be a damned maverick.

Quality-of-life position tends to be concentrated among certain ethnic groups in our society. The old Yankee elites. I use this term to describe those families who originally settled in New England, spread across upstate New York, across the upper Midwest, and out into the Pacific Northwest. You can trace these families back. It is from these families that you get almost all of the reform movements in the United States in any period. These families were the heart and backbone of the American Revolution, of the Abolition Movement, of the Progressive Movement of the late 19th and early 20th century, of settlement work, humanitarianism, native American socialism, the reform movements of the 19th century.

These are the people who have led change in America. One can trace them. Really, you can do genealogical tables on these people.

They tend to have backgrounds in the religious groups described here, mainstream Protestant denominations—Congregationalists, Episcopalians, Presbyterians, Quakers, Unitarians, Northern Methodists. You will not find many Baptists, less Lutherans, certainly few Mormons. In addition, Jews, especially reform and secularized Jews tend to be quality-of-life types. I am not going to try to explain why this is the case. This is just observation.

Of course, being politically realistic, we recognize there are interest supporters of the quality-of-life interest. There are interests involved in some movements, although one would argue in this particular one, interest in raw economic interest is of less significance than values and broader social interests. But for what it is worth, there are people that stand to benefit directly from supporting the quality-of-life position. These are, of course, purveyors of environmental equipment, planners who have an interest in control, obviously, socialists who recognize that capitalism makes promises based upon economic expansion and if you could block the expansion, it might perhaps collapse on its contradictions, as according to Marxist theory, and developed by more subtle and more modern socialist thought.

Other supporters of quality of life are purveyors of government studies and politicians sensitive to quality-of-life constituencies.

On page 7, chart 8, are opponents of the quality of life. These tend to be Southerners who do not come from this Yankee reformist tradition, black Americans, blue collar workers on the whole, what are lately called white ethnics, Roman Catholics or Orthodox, trade unions, nouveaux riche, and businessmen on the whole.

By no means are all of these people opponents of quality of life, but skepticism about it, hostility to it, and strong support for standard of living or the traditional American way of life tends to concentrate in these groups. On the whole, these are people who perceive themselves to be on the make, people who want to go up in our society and favor individual and, therefore, national expansion.

Chart 9 is just a quick piece of evidence to indicate the thesis developed above. This is a description of the Sierra Club, one of the leading, originally conservationist organizations, which has evolved into a more broad, what I would call an environmentalist or quality of life organization. Its membership is concentrated among these highly educated prosperous groups in society.

Chart 10 is making a case that it is very sensible and rational and reasonable for the upper-middle classes in America or indeed any country to oppose economic growth; that their quality of life is being eroded by further growth and by mass prosperity. Up to a point of growth, the upper-middle classes, which I define arbitrarily as those who make between 2 and 10 times the family median income (which in America today would be \$25,000 to \$130,000 a year); benefit from the initial stages of the industrialization because they get better health care, they get highways, they get foreign travel, they are better off.

They are also better off because the old classes above them, the old autocracy and religious leaders are pulled down. However, as growth continues, their quality of life is cut into severely. They are subject to traffic jams. They are subject to crowding in parks. A few years ago, we celebrated the centennial of the first great national park, Yellow-

stone, which was established in 1872. When Yellowstone was dedicated for all the people in the United States, very few of the people could get there. The train fare from Chicago to Yellowstone was 3 months of a working man's wages. Who went to Yellowstone? Clearly the prosperous. Now it seems that every working man has a camper and you have to wait in line to see Old Faithful. That is an improvement of the quality of life for the working man definitely which he can now enjoy Yellowstone even waiting in line, but for the families who used to have it to themselves, it is a definite cut in the quality of life. The same is true with shore resorts.

You can go through any number of things, indeed visiting this fine building, visiting the Capitol. It used to be a generation ago a very simple thing for someone to go in the Capitol; indeed, to meet his own Senator and have someone show him around. Now you have to pull strings, you have to wait in line. There are just too many people now coming to what is still one Capitol Building. In some areas, we can build more of these things.

It is a little tough to build another Capitol.

Senator CULVER. Instead of being a tour guide 1 hour a day, it often takes 24 hours a day for us.

Mr. BRUCE-BRIGGS. It erodes the quality of life of the political leadership as well.

Senator CULVER. That may occur at times.

Mr. BRUCE-BRIGGS. Let me turn to page 8. (Page 326.) I do make the point here that by no means is this exclusively a narrow class issue. It is a question of style here. I made an arbitrary list of the sort of traditional standard of living, *nouveau riche*, Texas millionaire, lifestyle in the left-hand column and on the right side, the quality of life issue.

There is a general tendency among quality of life people to avoid vulgar display; that is, they don't like big flashy things, they like things subdued, toned down. Another common value of theirs is the preference for preindustrial techniques and materials—wood rather than plastic and chrome, horses rather than motorcycles, sailboats rather than powerboats. Again, this fits in with my previous point of the notion of the rejection of the industrial revolution.

This by the way, is not entirely new. One thing you notice in every American city is that the upper middle-class suburbs try to make their communities look like no one in that community works for a living, like they have always had money. You are permitted in these areas to be a doctor, lawyer, or architect, but nothing else. You cannot park a truck in front of your house. The isolation of the family life from the economic life is insisted upon symbolically.

In working class areas, they don't worry about this. You can do any business. Your truck is outside. You work for a living. That is part of life.

Turning to page 9 (page 327), often to my mind there is a blur of understanding of the differences between conservationism and environmentalism. The standard of living people are the people with traditional values as I have defined them today, are very interested in conservation, but the conservation movement when it began at the turn of the century was quite different from the current movement.

The original conservationists were conserving nature for man's use. We were to exploit the environment and exploit it rationally. The

environmentalists see it as almost an Indian reservation, something to be saved from man's ravages. Now it is an extreme distinction between the two, but it should be noted and this is sometimes forgotten in disputes over these kinds of issues.

On chart 13 (page 327), which is drawn from the book, "Things To Come," we are pointing out that by no means is the quality of life position entirely based on some sort of class plot by the prosperous against the working man. There are legitimate things to be worried about. There are some things in the world which are extremely and potentially dangerous.

None of these things are very attractive and these are things which we will have to be concerned with and deal with in the future. To some degree of course these are things which we have been looking at, worrying about, and dealing with in some sense, certainly we could have done better for a century or more. This in a sense is the history of the problems of the Western World.

Let me turn to page 10 (page 328), which is a projectural list of the quality of life of the average nonprivileged American. This is not necessarily complete nor it is necessarily in order of importance. But these are the sorts of things which I will argue—this can be supported by the cold data or just talking to people—is what really people worry about in this country and in most of the world.

First, of course, is successful interpersonal relations, how you get along with your wife, family, girl friend; good health. Then, pride in his nation; national security, safety from foreign attack; personal security, moral environment, that is, what is occurring that might be thought particularly corrupt, things like graffiti, various forms of ugliness in the streets; employment security, obviously; maintaining the established standard of living and lifestyle, that is, people expect to live as well as their predecessors and their peers, men of their own age group, people of their own age group and class; potential upward mobility. Most people have few illusions that they are going to go very far, but they want that opportunity. They want it open to them; education appropriate to achieve the above, which is seen by most people as receiving good habits and useful skills. They also want a suburban environment. The suburbs are not considered by most Americans as some sort of poisonous growth upon the countryside; they desire single-family houses, a yard, a garden, they want personal mobility. They want to go where they want when they want. This means of course the automobile.

They also want recreational opportunities.

Clearly suburban environment and the recreational opportunities require clean air and water. This is the principal reason I would argue why the average nonprivileged American is very much concerned with the environment, very much indeed.

Let me respond to these questions addressed to me in your letter of last May 26. I will read this because I have run over a bit, I think, already.

The first question is if the present trends remain unchanged, what do you think the quality of life will be in the year 2000?

As suggested above, what is the quality of life will depend very largely upon who you are. If present trends remain unchanged, the quality of life will be less favorable for the privileged orders of the

United States and the Western World in general. The prosperous will find it increasingly difficult to obtain personal servants and luxury services. There will be a general leveling of the quantity of income and quality of goods available. The resorts and other playgrounds of the prosperous will be even more overrun by the newly prosperous lower orders.

One of the aspects of industrial society has been a general leveling of income. Some of the data which are produced would contradict this, but that is because they load the data, by putting it before tax. It is after tax which really matters, of course. Also, it can be demonstrated by little things like it is increasingly difficult to find personal servants and get good services like tailors, shoeshines, and cobblers because it is now too expensive.

If you were in the upper middle class in say 1900, your income was so much more than these other people you could afford to hire them. Now, the incomes have narrowed. The maid is making much more relative to the family that is interested in hiring her.

Not only will upper and upper middle class Americans be obliged to share national parks, beaches, and cultural facilities with newly rich Americans, but with many millions of *nouveaux* from foreign countries as well, such as Mexico, Brazil, Korea, and many others.

These countries are coming up fast, they have a lot of money, will have more money, and they are going to be crawling all over this country. Already the English are appalled that it is now a nice place for Italian tourists to go. That is not how they believe that God made the world to be organized.

Conversely, for the great bulk of humanity, the quality of life will be superior. I don't mean that in a political sense, but the individual choice to own things, do things, possess things, get services, travel and enjoy more trivial luxuries that we rich take for granted.

The second question is, "Is our present rate of economic growth advantageous?" No. If it were more rapid, we could better provide for our national security, for increased social programs, for the elimination of poverty, for aid to developing countries, and for investment in systems to reduce pollution and other environmental damage. If we were richer, the costs of environmental control would be much easier and much more politically palatable to people as a whole.

Three. is there a tradeoff between quality of life and quantity of goods? There are numerous and innumerable tradeoffs between different human desires for quality and quantity in all aspects of life. However, one can make a general statement to the effect that as society becomes more prosperous, men become more expensive and goods more cheap.

A modern industrial economy places relatively little value on goods so we have, for example, a tendency to make things and throw them away and not to repair old ones. The repairing is labor intensive, make work. It is custom work. You cannot mass produce it. The most outstanding examples of this are housing and automobiles; but it is true in most areas of activity.

Such a system seems to be the inevitable result of a prosperous society. Judging from past examples, goods could be made more expensive and labor more cheap and better services provided for the

prosperous by driving down the wages and standard of living, and presumably the quality of life of working men and farmers.

What is the effect of this relationship on the environment? The relationship just described requires the supply of increasing amounts of energy, raw materials, and manufactured products, all of which are produced by processes which affect the environment, in a few cases in a significantly negative way.

However, the relationship also produces the means to control these negative changes and much more importantly, has practically eliminated the most obnoxious and lethal forms of environmental degradation—especially the endemic diseases which have literally plagued humanity from its beginning.

For example, the most effective environmental control measure in history has been to mechanically separate water supplies from human excrement, historically the vehicle of death of the majority of human beings. I recently wrote something to the effect that there was an anti-automobile protestor in Los Angeles, carrying a sign saying, 'People don't pollute.' I thought of that as a triumph of a slogan over the most ordinary experience of mankind. People do pollute and it is deadly pollution. We have learned to deal with it. We do not give any credit whatever to the people who are the sanitary engineers saving our lives, just as today we give no credit to the farmers who are feeding us. This is one of the inevitable products of success. We take it for granted that these things will be done for us. We may be taking too much for granted.

Question four, what environmental changes may occur in the next 50 years which will adversely effect the quality of life? Table 15, also taken from "Things To Come," lists some possibilities for, to say the least, extreme degradation of the environment. Most of these are extremely unlikely, but could be so hazardous as to more than justify the need to be monitored very carefully and, if necessary, steps taken to abort potential dangers and disasters.

If you can read this list on p. 14 of my statement (page 332) and not be frightened by something on here, you really lack imagination. Some of this is scary. Let me take a trivial one, which I can't resist, which we may be right on the verge of it today.

Scientists are claiming to be just about to achieve an accurate ability to determine the sex of a fetus very early in pregnancy. We are now, in this country, having legal abortions, up to the third month, by right, according to the court.

We also know that most people prefer boy babies, especially for the first child. That will put us in the position, at least in the short run, where we are going to have an overflow of boy babies; the moral inhibitions against abortion is down, you can decide what it is. So you have all of these boys and not enough girls.

I don't think that is the kind of thing the Supreme Court thought about, nor is there any reason why they should have thought about it because the technology does not exist. It is highly likely it will exist in a decade, but it does not exist now. But I think that will change the ball game.

Of the things on the list, the most frightening is the adverse environmental effects of the use of nuclear and thermonuclear weapons in war-

fare. During the next 10 to 20 years, it is highly likely that an additional 20 to 30 countries will obtain nuclear weapons and a few of them will have the capability of launching sneak attacks upon the United States and certainly upon each other.

We tend in these days not to think of nuclear warfare as environmentally degrading. However, let me assure you there is excellent evidence that the effects are very bad. Blast, heat, and radiation are not good for health, to say the least.

Question five, what are the most significant actions that the Federal Government should take to improve the future quality of life? What would be the primary effect of these actions?

Senator CULVER. Do you think it would help if we put that warning on nuclear warheads?

Mr. BRUCE-BRIGGS. "Caution, may be hazardous to your health." I am sure the Consumer Product Safety will insist that whoever sells these things to the Air Force will do so sometime in the future.

Senator CULVER. Unfortunately, it wouldn't affect their use.

Mr. BRUCE-BRIGGS. They put the label on cigarette packages, too. If they feel better, why not let them do it? It is good for the printing industry.

What the Government should do about the quality of life depends upon the view of what it is. I will give my personal view on this. I do think it appropriate to point out that most activities of the National Government intended to improve the quality of life of the bulk of Americans have very little to do with the quality of life as understood here, or even the environment. Remember the list that I gave of the quality of life which the Americans have, had little overlap with the quality of life issue as perceived.

However, were I to take a priority list, it would include the following:

A. Prepare better defenses against nuclear attack.

B. Better defend the citizenry against crime. It is a substantial part of the deterioration of the quality of life that Americans are afraid on the streets and even in their homes.

C. Continue the excellent programs of the last two generations intended to ease the route of most Americans in upgrading the quality of their life by moving to suburban or even lower density communities and neighborhoods.

At the present time, quality of life and environmentalist arguments are being speciously used by established self-interest groups to block more people from enjoying the benefits of suburban and exurban life.

The ins in any suburban community have a real interest in keeping the outs out. Further development does degrade the quality of life of the people who are there, but permits upgrading quality of life of the people who move out from the cities or from the small towns to these places. The quality of life, environmentalist's argument is being corruptly used to support established local interests.

D. Continue the existing excellent Federal programs intended to ease Americans in maximizing their mobility. In particular, continue something like the highway trust fund to build highways both to assist suburbanization and for the general freedom of movement for most Americans.

Needless to say, the attempts by self-interested and selfish groups to drive the bulk of the citizenry off the roads should be resisted. As I pointed out before, the automobiles and automobile system is best when most people don't drive. It is very nice when there aren't any cars on the road.

The twenties and thirties were the golden age of the automobile, the prosperous, because the working people had not yet obtained them. Now when every guy has a car, the roads are jammed and we hear how rotten the cars are and we should build mass transit systems for the other guy to get off the highway, as we all well know.

E. Take coherent, systematic steps to bring in safe, politically reliable and environmentally sound energy resources. There are more than enough on this continent to provide us with adequate fuel for the next several hundred years at the very least.

In particular, take whatever steps are needed to get us over the hump of the next 30 or 40 years, after which practically limitless fusion, solar and geothermal, and perhaps now unthought of sources of energy will be available. It would seem that energy is inexhaustible; but not in short run.

That is a contradiction, I know; but we are going to have energy problems, largely political problems, for the very simple reason that Arab oil will probably continue to be the cheapest form of energy in the world for the next generation probably; and Government steps have to be done, market solutions will not work on energy, at least not for the next decade or so.

The last point, systematically review all existing environmental standards, many of which would now appear to be unnecessarily limiting the liberty of individual Americans and cutting into their standard of living and quality of life.

In particular, Congress should be most cautious about giving discretionary power to regulatory officials who seem in many cases to reflect the views of a narrow class to the detriment of the quality of life of the bulk of Americans.

Let me add a last one to this that is not in the text: Expand the parks. The park usage in this country has increased much more rapidly than has the park acreage. The National Park System has done an admirable job; but we need more parks. It is a very simple thing, but one which needs to be done.

Let me stop there.

Senator CULVER. I wonder if Mr. Theobald would like to address himself to any of the particular approaches Mr. Bruce-Briggs has expressed or vice versa. I think it would be good to have an interchange between the two of you concerning some of these possible points of difference.

Mr. Theobald?

Mr. THEOBALD. Let me be very brief because I think we need to save as much time as we can for specific questions, but the fascinating thing to me about the testimony we have just heard is that there are only two views. There is a quantity of life view or a quality of life view and nothing in the middle.

It seems to me that this is a central problem at the present time: The problem of the excluded middle in all of our analyses. I would

like to suggest to you that what has happened is a very strange thing in that the heresies of religion have simply become the fallacies of social analysis.

You remember, back to religious analysis, we used to have the problem of predestination which said that basically, you are going in one direction. I think we now have, if you, like a translation of that into a social system where it is assumed that because something exists at the present time, it is good, "meant to be."

On the other extreme, we had free will, what I call the romantic vision of what has been described. It is the belief that everything can be groovy for everybody and that there are no restraints on the system. That is the definition Mr. Bruce-Briggs uses, but quality of life people do not consider that romantic vision quality of life. We're using quality of life in two different ways.

In the middle, I place what I call the management view, the question of management, which was the view I was trying to talk to. The problem I have always had with the work from the Hudson Institute has been that there is an omission of the management issue, an omission of the incredibly difficult problems which are listed on that page 14. In a sense, they are excluded from the analysis rather than central to the analysis, whereas for me it is the management of those *x* number of problems which is the central problem we face for the next 30, 100, 200 or indeed for the rest of mankind's history.

So what I was talking to was in a sense the thing that has been excluded primarily from the testimony that we have heard: How do we come to grips with a whole series of issues of which we were told that one is the question of the ability to control the sex of children?

We didn't talk about controlling it. We talked about identity, but control is not that far behind. In India, where boy children are tremendously important, it would have some extraordinary dynamics. So that for me, the issue that we talk about when we talk about the quality of life is that interdependence and, therefore, management issue. Again, it is very important for the record that we see that quality of life has been used in two very different ways in this testimony.

I would only take up two points, if I may. First of all, we have, I think, conned ourselves in a most interesting way into believing that the greatest danger is nuclear destruction. I would suggest to you that there is a far higher danger of bacteriological and chemical warfare because if we have warfare, my guess is it is going to come from the tension between the rich and the poor countries. They have access to chemical and biological warfare much more easily than nuclear, and it is much more destructive. In that sense, it seems to me that keeping our eye on the nuclear thing enables us to be less aware of the danger from the poor countries at all levels than we should be.

The other issue that I have raised involves the normal economic assumption about income distribution: The "trickle-down" theory that by keeping the rich rich, the poor get richer. There is no doubt historically that it has been an extremely effective theory. I think anybody who denies that does not look at the data.

The question is whether that is still working. I would like to suggest to you that it is not and will work increasingly badly and that it

is about time that we recognize that we have no thesis, no theory at all to justify the statement that the amount of money people make is what they are worth to the culture. It is a thesis that can only be proved on the basis of neoclassical economics and the assumptions of neoclassical economics are that all firms are small: That there are no labor unions, there is no Government intervention in the economy and there is perfect movement of information. That is a fairly heroic set of assumptions.

If those assumptions are not true, the distribution of income is based on power and influence, as has always been the case. I am arguing at this point that this method of distributing income is not desirable, that we can no longer rely on either a national or international trickle-down theory and that we are going to have to look again at the methods by which we distribute income.

Mr. BRUCE-BRIGGS. Mr. Theobald has raised many issues which deserve extended debate, which I do not think would be at this time not the most efficient use of time here today.

Let me just make one point on income distribution, which I can't resist. What people make has not been the result of any rational choice by society, but is the result of tradition and inertia. There is a ranking order. There has been a long sense that educated people should be paid more, than certain occupations and professions are more honorable and should be paid more than the others. It is interesting how what we call a free market system provides the same income ranking as controlled markets. This, by the way, is accepted at all levels of society. The guy who is a ditchdigger accepts the notion that the man who runs the company should make more money than he does. He may argue what the relative proportion is, but he accepts it.

I did not address management issues here because I wasn't asked to. Hudson does not address them on the whole because on the whole we are not asked to. We are miserably managed internally, as our managers would be the first to admit. On the whole, we work for Government agencies which consider themselves to at least have the mechanics of management well in hand or at least in their own hands.

However, I would counter a statement Mr. Theobald made in his original testimony that the present system of fragmenting jurisdictions and authority does not work today. It does work. Perhaps it could work better, but it does work.

Given that each of our imaginations and time is limited and given the fact the world is so huge and complex, and filled with so many people, the statement that everything is interrelated, everything is intertwined is true, but it is not very useful. It is necessary to chop things up to deal with them, just as we must chop up today—do this in the morning, that in the afternoon. No matter how participatory we may get in our system, we are going to have experts do things for us because we don't want to be bothered with it.

Most Americans would not like to be in this room. Most Americans, I suspect, if they knew about it, would see it somewhat a waste of time. Others would think they are glad somebody is doing it. They are glad Senator Culver, of the 100 Senators, is concerned with these matters and that there is a group of 50-odd people who are interested in these things; but they don't want to do it themselves. They have other fish to fry.

It is often complained by political scientists that people are apathetic. They have different priorities. We don't want to be doing what they are doing either. That is characteristic of society's specialization, although we should not exaggerate it.

Other things that we do, as Mr. Theobald complained, is not irrationality. He used driving, the fact we are saying things about the future of cars; on the other hand, we should have fuel, this, that, and the other things. It is only that different parts of the Government, which is a large amorphous mass, are responding to different stimulus.

It is quite rational that the Department of Agriculture is promoting the growing of tobacco, while the Surgeon General is trying to discourage people from smoking. They are responding to constituencies. That is the inevitable part of the democratic process. If we did have a government that was cohesive with everything centralized, we would have tyranny in 1984, as Mr. Theobald described.

Senator CULVER. If I could use this opportunity to get some specific suggestions from you. From my vantage point as a public official, I think we live in a time of accelerated change. There are a few things we can all agree upon: an unprecedented rate of change and the alacrity with which new problems emerge for our consideration.

This has given rise, I think, to a number of other problems, including a greater interdependency regarding the implications of our problems and a smaller margin of error than we used to enjoy.

Certainly there is an appreciation of our finite resources and of the challenge to government and a free society to better anticipate these problems so that trade-offs can be seriously entertained before technology outstrips our society.

It seems to me that if government continues its demonstrated inability to deal effectively with problems in terms of the alleviation of pain in society, and the minimization of the sharp and destabilizing confrontation of emotion and value crises, we will increasingly narrow the likelihood that our institutions will remain viable.

The challenge is I think, to view our present institutional structure in terms of its capacity to get out ahead of some of these problems. We must also review how we can properly call upon our own educational system to make our population more sensitive to entertain uncomfortable thoughts about future choices and trade-offs. So that appropriate pressures are brought to bear upon the elected officials, we need to examine the reward and incentive system of our political processes, where the premium of political reward is currently preoccupied with short-term considerations.

In the area of bioethics, for instance, where we are now seeing medical science extending life expectancy, we are not doing anything, to my satisfaction, to better equip us to cope with the growing number of elderly in the year 2000 in our society. We have missed every stage of the way. With the baby boom, the workforce boom and now the elderly boom, we have struck out three times; we have done nothing to accommodate or to anticipate any of these social, political, economic problems.

We are going to be faced with some serious problems in the health care area. For example, the political pressure, because of the number of elderly, is going to be on the high-cost health care programs to

prolong the quality of life of the elderly. There will be very little attention given to the fetus and the unborn in terms of what it could mean to the quality of life to provide prenatal care.

How many kidney machines should we have? For whom? Who lives? Who dies? What role does the State play financially in making that judgment? How does the Government play God responsibly?

What it really comes down to is, one, how do we bring about the educational effort in the society to reflect the modern pressures and the speed of change in order to make informed judgments upon which that system is ultimately based?

Second, how do we design the political institutions so that they will more systematically entertaining futuristic trends and options? I believe the fact that we are here probing the cutting edge of new frontiers, in a common interest of trying to at least elevate the debate and dialog in this area, is significant in this regard.

I was interested in your comments about categories of those who are the most imaginative and most sensitive to considerations of new lifestyles and so on, the thinkers versus pragmatists, all of which are nonsensical labels in many ways.

But I have often felt as a politician that we are really better off these days listening to the folk singers who are out ahead in their artistic sensitivity to trends, whereas your average public servant rarely forms public opinion, just rushing to catch up to lead it. We see that this week in certain developments in the Presidential campaign.

I don't think this town ever forms public opinion. Our so-called leading media experts just run around to find out what the country thinks and then rush to comment on it. It has been a long time since this town has had any original ideas. Public opinion is shaped somewhere out there in this great land, and this town is the last one to get the word usually.

So I think this is the kind of thing I would like to look at. What do we do? The need for greater citizen participation is important. I know you have worked with that area, Mr. Theobald, at the Northwest Regional Foundation, the State of Washington, and the State of Iowa. This is the real challenge. How do we keep foresight and planning from being an eliteous blueprint that is imposed, with all the imperfections and dangers, on the public?

Maybe you could wrestle with some of these concerns?

Mr. BRUCE-BRIGGS. Let me take the cowardly way to answer a question which is challenging the assumptions it is based upon. I am not in agreement with the argument we are going through rapid and unprecedented change.

We talk of the year 2000 being a long way off and things happening then we won't be able to face up to. The year 2000 is 24 years away. Subtract 24 years, go back to 1952—I don't see that the world has changed that much since 1952. If you or I went back or someone of that age came up here, he would find color TV's, and jet planes, instead of prop planes. You can argue whether something more or less the same, but it would be a recognizable world.

The people who went through the real change were the people around the time of the First World War. If you left the country in

1905 and came back in 1929, there is a change, a change in lifestyle, values, technology, equipment, the whole country was different. We had peasants in 1905; in 1929, we had farmers. There is a big change.

I wouldn't agree that we have less margin for error. I think our problem is that we have too much margin for error. We are soft. We can really screw up. I don't want to comment on the political scene, but look at what the politicians have done for the last 10 years. It would look like a serious attempt to ruin the country. The country is still here.

Senator CULVER. Wait a minute. Just wait a minute. A serious attempt by the politicians in the last 10 years to ruin the country? Are you talking about President Nixon and the nonelected officials in that Administration? How much wider would you cast—

Mr. BRUCE-BRIGGS. I would be nonpartisan on that.

Senator CULVER. What is this systematic assault on our system?

Mr. BRUCE-BRIGGS. Now we are getting into politics. I was hoping that would go by.

Senator CULVER. These accusations occur so cavalierly these days that occasionally it might be useful to put them in a factual perspective.

Mr. BRUCE-BRIGGS. The whole Great Society effort was based on partially correct assumptions, partially incorrect ones. What is interesting to me about the Great Society was that the kind of social programs that were attempted in the Great Society were on the whole attempted in the New Deal. We had a whole history in the New Deal of attempting to fix things in this country, some worked, some didn't. Lessons were learned. Those lessons were forgotten and attempts in the Great Society were the types of programs which failed in the New Deal. Maybe we think too much about the future and we don't pay enough attention to the past.

We have tried. We have experienced our system. In Vietnam, I am not arguing whether that was the right place to go, the waging of the war was incompetent. They forgot what they learned in the Second World War and Korea. The educational system, the data are out now—

Senator CULVER. Excuse me. What did they learn and forget from World War II and Korea that would have been useful in Vietnam?

Mr. BRUCE-BRIGGS. You learned that—

Senator CULVER. Usually we are fighting the last war. You are saying we aren't even fighting the last war and that is too bad.

Mr. BRUCE-BRIGGS. We are getting technical issues, take interdiction, how you and why you bomb the other guy. You do not just drop bombs on him and hope he will go away. You have to put pressure on him at the front so he uses up his supplies. They forgot that in Vietnam.

In using Asiatic troops, we learned in China and in Korea, how to use Chinese and Koreans effectively. In Vietnam, we didn't do that. For example, it is hard for us to believe today, but there was no unified command between U.S. forces and Vietnam forces. We were fighting separate wars on the same ground. The equipment we had was less superior. This is not an argument for or against the war. They forgot how to fight it.

Senator CULVER. I think we can be preoccupied with all of this nonsense forever. If there is one thing you will probably get consensus on, it is the most informed and able military leaders who were avail-

able as a result of World War II and the Korea war. Had Eisenhower lived—

Mr. BRUCE-BRIGGS. Not on the terms they went in.

Senator CULVER. I don't think that is so helpful. I have said three things in my basic proposition. If you want to knock them down to the point of alleviating you completely from talking about the need to educate this society about anticipating change, or about making changes in this institution, fine. We will go on to Mr. Theobald if that is the case. Either we will just go along for the ride or there are a few things that you think we can do. I have said something that is hardly all that radical. I have said that change is accelerating perhaps on an unprecedented scale. I think we could all put together our respective documentation of that. At least it would be a draw.

Second, I have said that resources, even qualified in a tilt in your direction which I don't hardly endorse, are relatively more finite. Of course, I am not suggesting certain categories.

I also said our margin of error is less because of the alacrity of change. I can only speak from my experience of 12 years in Congress on the narrow margin of error that I felt.

If you want to dispute each one of those elements of that proposition, we could waste a couple of days. I think it would be easier for me to know whether you want to repudiate that rather hardly controversial notion and, if so, then my problem is a lot different than yours, I think.

If we aren't just indulging in some esoteric intellectual seminar, which I don't have the luxury of doing, I want to know whether or not there are a few things I can get from you, other than stuff I can get at Harvard about the lifestyles that go into making up the average businessman.

But if you really believe that we aren't interdependent, that our resources are assuredly infinite, and that our margin of error has never been better, I won't ask you any more questions. This other witness has got something to say. I am not saying that by way of favoritism, but he has got something more to talk about, and we only have about 30 more minutes.

Mr. BRUCE-BRIGGS. Let me go to the immediate points. I do think the background is important and that is what I thought I was here for. I was glad to see you get your back up because you used to be able to make that statement, the last couple of years, to the political leaders and they would take it. That indicates we are coming back, which is good.

Senator CULVER. Take what?

Mr. BRUCE-BRIGGS. Take that kind of remarks—that the politician screwed up the country without getting the adverse reaction. Your reaction is a good sign for the country.

Senator CULVER. You never got that from this politician. I could discuss the Great Society program, for example, and tell you why it didn't work. Nobody funded these programs; nobody believed in them. For 8 years, they have been administered by people who are systematically trying to destroy them. We have had vetoes and impoundments. Who can say none of those programs worked? They have never been tried.

I don't think there is anything infallible about them. I can show you a lot of them that worked well. Women's Job Corps Center, in Clinton, Iowa, for example, took 100 percent dropouts and made real live human beings who could cry and who had better hope.

I knew them. I came to Congress in January of 1965 and sat there while some insensitive, callous bureaucrat for political reasons destroyed all of those things. He was going to have an alternative. We are still waiting for the alternative. I saw the consequences and the social dynamite that resulted from these programs.

I had that debate when I got elected to the Senate a couple of years ago. I would like to see more of a real debate on this, rather than the kind of ducking and dodging we have in the country now. But that is another whole debate. Again, I think just throwing off these short comments that government can't do anything won't work. If that is the case, let us all go home and farm.

Mr. BRUCE-BRIGGS. Let me try to respond to the question, Senator. I think I hinted at what I would suggest in the testimony is: 1. I think Mr. Theobald and I probably are in agreement on as much as possible should be left to the individual citizens and families; 2. Related to that is the Government should do what everybody agrees it ought to do better than it has. These are the issues of public order, national defense, justice. It is in a sense not doing it well.

Let us go to the next point.

Senator CULVER. Wait a minute. I won't let you go to the next point. I have to stick with this point and wrestle with it. I am on the Armed Services Committee. You say we aren't doing a good job in the defense of the country. You say we should prepare against nuclear attack. Would you be more specific?

We have mutual assured destruction in the strategic nuclear balance right now. We have got two scorpions in the bottle. We are going to have 14 in a few years. I think that is more of a problem. As Mr. Theobald says, that is first stage, chemical warfare if we ever are going to get by that and afford the luxury of the next threat, OK. But what can we do on our strategic balance right now on the nuclear side to prepare better defenses against nuclear attack? What would you specifically recommend we do other than running around the world saying we are Avis, Hertz in defense? What would you specifically suggest we do now in terms of our nuclear inventory, our nuclear policy, in order for people to sleep better each night?

Mr. BRUCE-BRIGGS. This is a long term matter, when the proliferation has gone, God forbid, it looks like it is going ahead, no matter what we do.

Senator CULVER. When is that?

Mr. BRUCE-BRIGGS. I say this is not for this year, but to prepare for the nuclear proliferation of the eighties, nineties, as I indicated in the points.

Senator CULVER. I want to get from you an indication of what we should do in the particular situation of the guerrilla terrorist who buys a scientist and gets an atomic bomb. He walks into the Empire State Building, call the President of the United States, and says, "Move back to the pre-1967 boundaries or New York goes up."

What would you as the average member of the U.S. Congress do to guard against that contingency?

Mr. BRUCE-BRIGGS. Oh, boy.

Senator CULVER. You said Congress isn't doing its job. I have gone one step further and told you what our problem is. You haven't even told us that. You made a general statement. I have given you a specific situation. I don't know what to do about it. I am so glad you are here today.

Mr. BRUCE-BRIGGS. If I knew what to do about that, I wouldn't be here. I would be there.

Senator CULVER. You are giving us quite a shot. Your suggestion is agonizingly short of our clear obligations to the citizens.

Mr. BRUCE-BRIGGS. On the issue of nuclear proliferation, it would seem to me it would be good policy of the United States to seriously have mobilization based science for serious nuclear defenses of an active and passive sort. That active defenses are antiattack systems, passive defenses are civil defense schemes, not necessarily as I said this year, we are talking in this committee about what is ahead, looking way ahead in the future.

Senator CULVER. Are you talking about any refinement of our active arsenal? We have 8,700 nuclear warheads now.

Mr. BRUCE-BRIGGS. Active offenses are antiattack forces.

Senator CULVER. You mean the ABM?

Mr. BRUCE-BRIGGS. ABM.

Senator CULVER. You want to reactivate the ABM? You want to break the ABM treaty with the Soviet Union?

Mr. BRUCE-BRIGGS. It is the interest of both the United States and Soviet Union again looking ahead to both defend themselves against other powers. It would seem to me this is in the common interest; ABM reconsideration could be a contingency. We are talking about thinking ahead.

Senator CULVER. The ABM treaty wouldn't help you in my hypothetical case. You could have all of these white elephants in South Dakota, and that guy could still be in the Empire State Building.

Mr. BRUCE-BRIGGS. We are talking about many different types of threats from many different types of sources. The guy with the bomb in the suitcase is not likely to be a serious threat as Liberia, or whoever may have these things.

Senator CULVER. He has got to have a strategic delivery capability. It is usually better offered by Pan Am than he is going to get. We are debating now whether we are going to have a follow-on bomber. The Soviets can't afford a strategic bomber. The cost of a nuclear sub is \$1.3 billion, \$1.5 billion; your average ICBM installation, China, you know, doesn't have that delivered capability yet to be a strategic nuclear threat at all levels unless they take a commercial flight with a little gizmo. That would be the way I would go.

I can't see sitting there and, I don't mean to be, you know, but I think I have said enough here. Maybe we ought to just try to think about something—

Mr. BRUCE-BRIGGS. I didn't want to get into this issue because it is very complex. We could be talking about it for weeks. Many of these things are.

Senator CULVER. If you are asking me to vote for the American taxpayer to go bankrupt with more ABM systems, with respect to this threat, I am saying, in the interest of the taxpayer, we ought to examine other means.

Mr. BRUCE-BRIGGS. If you believed that this was the gravest threat to the Nation and spending this money would mitigate the threat, it would be a reasonable investment and the taxpayers would not object. I don't think the taxpayers would support it this year. I think you are absolutely right. But we are talking about the eighties.

Senator CULVER. We had better start now if we are going to do that. We spent 10 years deciding it was a waste of time to spend \$10 billion on the ABM. We lost by one vote in the Senate. We would never have made that mistake to start with, but one person changed the vote. Consequently we built an ABM system that we did not need.

We are all agreed that our security in the strategic nuclear exchange scenario is greatly enhanced as a result of having that ABM treaty. It has reduced the costs and risks.

Mr. BRUCE-BRIGGS. Just for the record, not everyone agrees with that as you know.

Senator CULVER. You don't agree with that? I think it is uniformly agreed. I really do. That is not a hawk-dove issue at all.

Mr. BRUCE-BRIGGS. It is not hawk-dove. It is technical issues among the people that study these matters.

Senator CULVER. It has prevented the danger of a successful first strike, which is really what the heart of the nuclear, mutual terror issue is about. It is the cornerstone of nuclear balance. Excuse me. Go ahead.

Mr. BRUCE-BRIGGS. Let me make a last point. The issue of public education, I must confess I am not going to be at all helpful to you on because I have a very strong sense that public education will go through communications and media that are controlled by what I have called the new class. I give as an example that on the environmentalist issue, there is good poll data out now that the majority of the American people now accept the position that we are running out of everything.

This is something they do not know about personally. People will be first to admit they are not competent to know how much oil there is, but they believe this is somehow the case and this is clearly a media thing which has been put over on them because there is no scientific support for that position. This is why I am nervous about trying to let the people know in some sense. The question is what are they going to be let known by whom?

I would much prefer if you could work a system whereas you indicated earlier, where the communication comes up from the bottom. That is the legitimate and I think in most cases competently done role of the political leadership. It is their business to be out there talking and if they get their view of the world from the Washington Post, the country is bound to be in trouble.

Let me add another point. We talked about citizen participation. This is something I would very strongly recommend. I saw a list once of the citizen participants in some sort of a future project in Washington. I am sure you know what it was.

It had a list of all the citizens involved. Not one of those citizens was an elected public official. They were all representatives of this new class that I described. It seems to me that if you have a half million elected officials in this country, that is the number, that more of these kinds of people who have been before the electorate on whatever level, who do have to go out and scramble for votes, that more elected officials should be on whatever local commissions or regional commissions or whatever kind of bodies they will be using to test and to mold public opinion.

Senator CULVER. What would you do here, institutionally?

Mr. BRUCE-BRIGGS. In the Congress?

Senator CULVER. Do you assume anything is needed, either in the executive or legislative branch, to prepare us to deal with our present and our prospective situations?

Mr. BRUCE-BRIGGS. I think you are really making a move in the right direction in institutionalizing part of your staff, such as the Congressional Budget Office. As you know, in a legislative system, you have a certain amount of specialization, as you should. Certain of your colleagues are knowledgeable on certain subjects, you rely upon their expertise, you respect their judgment. You cannot read all the hearings and materials. You have to know the Senator knows about this and he is motivated by what you consider to be proper political values and, therefore, you should vote with him or at least pay serious attention to his views.

Unfortunately, Senator Barnes may be voted out because we have a problem of erosion of authority in this country. It is tough for everybody that wants to be on top and to control everything; whether it is politics, business, labor, academia, you name it, everybody is getting it. This is a strong social tendency. It would seem to me that the institutionalizing of some of the staff as the Congressional Budget Office, as the GAO, is a very desirable thing. I would add something on top of that.

Senator CULVER. With all due respect, one of the most acute problems is that the staff is too institutionalized in the committees, with absolutely terrifying consequences in terms of the quality of public policy. It is based on the seniority system, which just inherits the past and insists on its perpetuation.

So the nice thing about the CBO is that it has only been in existence for 2 years, and the jury is still out whether or not it will be in operation next year. We tried a budget committee in 1946. It didn't last more than 2 years because of the jurisdictional objections of the existing committee staffs and membership.

I don't mean to discuss an internal matter here, but don't hang too big a hat on that peg either because the question concerned fundamental improvements in the capacity of this institution.

Mr. BRUCE-BRIGGS. My last point is that the Congress might consider, I have no idea of the political possibilities of this, doing what corporations do, which is reorganization every 5 years. They don't even need a credible theory of why this makes it better. Just reorganize, shape things up, move things around.

You have to justify on some grounds, however specious, but you do it, then find years on you decide it is not going to work. You do

it again. You just do it, just churning has apparently desirable effects, at least so the corporations believe.

That is my last point.

Senator CULVER. Thank you.

Mr. Theobald.

Mr. THEOBALD. I find it difficult to sit silent as I guess I have for a long time.

Senator CULVER. Admirable restraint.

Mr. THEOBALD. I still have this respect for authority that I am told is disappearing in the country.

Senator CULVER. I am just a momentary abrasion.

Mr. THEOBALD. What I think we have seen, and I think it is perhaps one of the most important things we can see, is the incredibly wide divergence of opinion that exists; we have different people perceiving the same world in radically different ways. That leads to certain consequences.

I want, if I may, to take a few minutes to try to spread out some of those consequences because it seems to me we heard one version, one version that leads us into a multithreat world which to me, having read science fiction, can only end in the ultimate destruction of the world.

If anybody can convince me that that system is stable over the long haul, I will be grateful; but I have found nobody who can do that. What we do is build a more and more unstable world which one day blows up and blows up totally because there is too much around, nobody knows where it is coming from.

The second thing I would point out in that testimony which to me is extraordinary is that what is implied in it is a rich, Russian-American versus the rest of the world. We can get together with Russia against the others. I see that happening and it is an interesting example.

The issue that was raised when I suggested that we should have a Congress that understood what it was doing and a government that understood what it was doing, instead of the Health Department trying to prevent people from smoking while the Agriculture Department supports tobacco as a crop, was fascism. Mr. Bruce-Briggs in effect argued that if each department of government acted intelligently on a coherent body of knowledge, this would lead to fascism.

I do not believe that intelligence and fascism are the same thing. I do not believe that we can afford a culture in which different governmental departments say mutually exclusive things on a continuing basis. I believe that leads to what I call bureaucratic fascism. I see a great deal of evidence of that developing where different institutions and different citizens are being bullied—I use that word advisedly—by different bureaucracies, or even by the same bureaucracies, to do noncompatible things.

So when you get into, for example, the whole question of quality opportunity, hiring people, one group is for Mexicans, another for blacks, another for women, and you say “which one first?” They say, “We can’t tell you that.” I have heard this happen.

Senator CULVER. May I tell you a little story? I don’t mean to keep interrupting you. The other day the Commerce Department sup-

posedly circulated a questionnaire to small businesses asking them how they were coming with minority hiring—in this case women.

The first question posed in the survey was, "How many employees do you have, broken down by sex?"

Senator CULVER. When they got the questionnaire back from a small Iowa company, the answer was "None, our problem is alcoholism."

That is just to help you make your point.

Mr. THEOBALD. One point that I make in my testimony is that there is one other model that we don't have represented here that needs to be represented. It was the extreme of what was called by my colleague, the quality of life model, and that is the romantic vision that the world is fragile, that it will fall apart, that somehow we have to get things back to a very disconnected, noninterdependent world because interdependence doesn't work. It calls for us to go back to a much simpler life style, I consider that impossible, too.

I suggested essentially, to make it very sharp, that the only hope we have is for the human race to grow up, that we have reached the point where we can no longer afford to play threat games, to play win-lose games, to fight each other and that if we cannot learn that, we will destroy ourselves and each other.

That is a point of view that you will find increasingly among a large number of social critics. It is not the point of view on which we make policy. To me that is the question. We obviously have different viewpoints, but let me now scope that out in terms of what I would suggest we do.

Number one, as we look at education, I would suggest that the most urgent task is to fund heavily the community colleges and those institutions which are not trapped in the type of model of education which we are presently teaching.

Our present educational system, like everything else, is a divided system: economics, politics, whatever. They do not learn how to think and how to make decisions. I agree with my colleague that we have to learn how to make decisions.

The fact that everything is interconnected to everything else is not relevant here. We have to divide somewhere. Teaching somebody where you divide a problem, what you cut off is the critical skill that they ought to be learning in schools and in colleges. The community colleges can do that and they are doing it rather well.

But as you look at the community college problem, you find out that they are being underfunded and they are being pushed into being sort of a routing into the 4-year college and into vocational education and the narrow job creation sense, without any sense of the capacity of the individual to grow up, to become himself or to make intelligent decisions.

That is to me one of the major crises—again, I apologize, but the community college is being gutted from its community education function. Unless that becomes reversed fairly shortly, in this Federal and State, I think the community college is going to lose all of its promise.

That extends, of course, to adult education and to all of those types of education where you speak to people's real needs rather than talk to them in economic or political terms. To some extent, that deals with the problem of the new class and I agree on this particular line: Coming from people's own concerns.

In terms of the media, I really don't know, because I do not believe that PBS is significantly—

Senator CULVER. Excuse me. What would you do, Mr. Theobald, about the elementary schools? Would you have them write more about the future and less about the past? The community college kids have already matured.

Accepting my assumption about the speed at which things move, why shouldn't the indoctrination about being sensitive to future implications and longer range perspectives be emphasized earlier in education?

Mr. THEOBALD. It should. I find that it is. I find that the elementary school is probably the best part of our school system. It is as people go up. The problem is that those people, like all of us, are trapped in particular blocks. In this case, it is the block that everybody ought to get into college.

You already have people in kindergarten being pushed because they say the way to get in college is to teach them to read early. This is where it becomes the chicken and egg problem. I use the community college because I think it is a particular way of reaching the parents so they can reach to stop pressuring the kids and it is something I have been doing a great deal of work in, but if you push it further, to me, this is a life-cycle question.

Why do we keep people in school if they are 18? There is no good evidence for that at all. Plato, a long time ago asked us whether it was very advisable for teenagers to sit and not do anything. I think one of the things we really need to look at is whether we don't need a break between schooling, to go out and do things and come back and learn again. I think a lot of young people know this.

I think it is also important for me to put in here something I think my colleague would strongly disagree with: That is people in my opinion, do not think the way that he implies. I find people hungry for the sort of discussion we have had in this room. I find this true of all sorts of people, not only our class, the people sitting here.

I find people ready to listen to this talk of transition, of differences. I find them in Iowa, as I worked through Iowa, and Washington, the League of Women Voters, and AAUW, in community colleges, which are not primarily middle-class people.

I think as you look at this political year, you have to wonder what it was that Governor Carter was touching. I think he was touching that theme of transition in people and one can argue, as people have, about how effective he has been.

So in education, I don't know what to do about television because I am not any more happy about educational television than I am about networks. It seems to me they both run documentaries which start off saying that they are objective and end up saying "if you didn't believe what we told you, you are a bum."

In other words, there is this gap between that statement of objectivity and what is known as the slant of the show which makes the show worth watching. We need shows which come in not saying "here is the answer to the food question", but "here are the questions we ought to be dealing with." It is a very different type of show.

Until we do that, people are not going to learn because they feel they are being manipulated by a group of people. Therefore, what

I want both in education, in all of its senses, is the opening up of space for people to discuss the opinions and options that exist and that brings me back to the problem/possibility focuser.

In Congress, I raised this briefly—

Senator CULVER. Regarding the media, what about cable television? What about feedback techniques?

In my own State, 50,000 people have been involved in these futures conferences at the grassroots level. It seems to me that when we talk about the future, the untutored mind often has the most to contribute.

I think unless we lose complete faith in democratic society, in the capacity of individuals to make that kind of contribution, this is an important area to investigate. How do we get that back?

I think we are talking about a two-way street. What I am interested in is any sort of innovative suggestions as to how to exploit modern technological capacity and capabilities to do this better, especially on the educational front, with all the admitted limitations that have been expressed here. What kind of pressures, directions, and formats could you envision to enhance that process? How do we draw out the materials that are there?

Mr. THEOBALD. I think you open up an enormous can of worms with that question, as you are only too well aware yourself. I would be very willing to submit for the record material that we have developed around that.

The biggest problem is that in a sense there is no single answer. There are a number of diverse models on citizen participation which you have got to look at. You look at the city and say "how do we do it", rather than saying "here is the model."

I think; for example, of our failure to develop material for cable in the form of a catalog that cable stations could use. As I go around the country, cable is not being used. The access provision which was built in is not being used creatively, partly because the material is not available.

It seems to me, frankly, that we have not found a way as a society—I am not saying this is necessarily a congressional function—to say "here, look, you have every great mind and all sorts of different types of people, including some of the people who have commonsense and not excluding those who take to these issues, why didn't we build that into the process?"

I have been talking recently to some of the computer people on interactive computer dialog. I have been startled and to some extent shocked by how far the technology has moved, how rapidly that is going to become a dominant interaction forum, again without us understanding what this is going to mean in terms of how decisions get made in the culture. So I don't think I can talk to that effectively in the time we have left.

Finally, let me restate, it seems to me that somehow there is a need to mesh our management understandings with this discussion of congressional reform. You see, the funny thing that I find as I work at this and what I have learned from system theory is coming in exactly the same place as many modern management thinkers, is that the sort of issues I raise in terms of managing the society are

the same issues that the firm raises in terms of the capacity to manage itself.

The reason I think Congress does not work in the way that everybody in this place and the people want it to work, is because we break every rule of management. Congress is set up in a way which in a sense insures the failure of the intent of the people who came here.

As my last point, if I may, I think we have to break through the difference between what I call the private and the public dialog. We talk privately, many of us, and there is, with due respect to my friend on my left, a very fundamental agreement that things are going sour in the culture. I agree, and I think this agreement goes very deep, although there are obviously disagreements as we have heard.

This does not get into the public debate. It doesn't appear in the media. If it does, it appears in the simplistic form of the neo-Malthusian version which is to me equally dangerous. It does not appear in the sense of, "OK, here we have problems." I have done, as you know, a great deal of work on the Bicentennial.

I did it in the hope that we can come out of this year saying "1976 is the year of the great problems we had in 1776." I realize there are peculiarities in a Britisher addressing the Bicentennial.

Senator CULVER. Most of our problems are internal.

Mr. THEOBALD. I try to match them up. But the basic seems to be—if we could come out of this year aware that massive problems do exist, but feeling that we are a great Nation with the capacity to solve problems, that the world itself has the capacity to solve problems, then it seems to me that we will have achieved what the Bicentennial was about.

If we do not, if we assume that there are no problems, I personally envision that degradation of life that I talked about earlier.

Senator CULVER. You made a statement, I would be interested in whether or not Mr. Bruce-Briggs agrees with a statement made by Mr. Theobald. Mr. Theobald talked in his paper about the fact that the Club of Rome's neo-Malthusian alarm of 5 years ago has now been subjected to a midcourse correction. The Hudson Institute probably welcomes that as an acknowledgement of the opposition they expressed 5 years ago to these gloom-and-doom predictions.

Would you basically agree with that, Mr. Bruce-Briggs?

Mr. BRUCE-BRIGGS. Senator, I think you put the finger on it in your comment a few minutes ago where you talked about people being trendy now. I think the trend of the country is toward conservatism and that the media, like everyone else who picks these things up, is merely reflecting that. That is one aspect of the general trend to the conservatism, if that is what you want to call it, in society. I happen to prefer trendy conservatism to trendy liberalism, as you would gather, but I don't think any more of people following one bandwagon more than the other. I think your analysis that neo-Malthusian ideas are going away is correct, except, as I hinted in my paper, I think the neo-Malthusian view of the world is very useful to some people and will not go away very soon.

Senator CULVER. I am sorry?

Mr. BRUCE-BRIGGS. The neo-Malthusian view of the world is socially useful to people, so it will not go away because it is disproved on a

scientific level. It is very useful for people to keep people out of those country houses, to keep people out. I don't think that will go away because of scientific evidence.

Senator CULVER. We have a number of questions prepared by the staff that I would like to have the opportunity to submit to you. If you would be good enough to try to respond to them, we could make them a part of the record. In fairness to both of you, these questions will ask you to elaborate on some of the main points you made in your prepared statements. If we could get your cooperation, I would appreciate it.

[The questions follow:]

HUDSON INSTITUTE,
Croton-on-Hudson, N.Y., July 13, 1976.

Senator JOHN C. CULVER,
U.S. Senate, Committee on Public Works,
Washington, D.C.

DEAR SENATOR CULVER: Here are my answers to your queries of 23 June last:

Question 1. "You recommend review of environmental standards, implying that they are too strict and reduce the standard of living.—How do you reconcile this with the fact that air pollution is getting worse—as we can see by recent air pollution problems in Washington, D.C.? Last summer even the state of Iowa had an air pollution alert—our first ever. And reports are available that indicate crop loss and adverse health effects stem from this air pollution."

Answer. I did not imply that environmental standards were too strict. I implied that they may not really be intended to improve the environment, rather deliberately to reduce the standard of living. I would suspect some are too strict while others are too loose.

By the way, regarding the air quality in Washington and Iowa: The Environmental Protection Agency of the District of Columbia advises me that of the six statutory air pollutants three have been reduced and three substantially unchanged over the short period that pollution has been recorded in Washington. The Department of the Environment of the State of Iowa advises me that Iowa had an "air pollution advisory" for ozone which was the first because the facilities for monitoring air quality had only been in place for two and a half years. In both Washington and Iowa, it is quite possible that the air is superior to what it was in the 1950's and 1960's. Also, the Iowa air quality people report no evidence of crop loss or adverse health effects. In both Washington and Iowa the air pollution alerts and advisories were not due to increased pollutants in the atmosphere but the combination of approximately constant levels of pollutants with peculiar meteorological conditions.

Question 2. "You have made many statements about the sociological groups which support 'quality of life' vs. 'standard of living' concepts. What specific data support your views?"

Answer. The analysis is based upon my living in the United States and talking with citizens, both "elite" and "mass". This is buttressed by systematic reading of public opinion poll data, especially the Gallup Opinion Index. My analysis is paralleled by several books, particularly, Frank E. Armbruster, *The Forgotten Americans* (New Rochelle, 1972), Ben J. Wattenberg, *The Real America* (Garden City, 1974), and S. M. Lipset, *The Divided Academy* (New York, 1975).

Question 3. "Do you believe there should be a greater awareness of the need for more effective foresight in public policy? What suggestions do you have for increasing this awareness?"

Answer. Yes, I do believe there should be a greater awareness, but I am not sanguine regarding the possible positive effects of the deliberate promotion of such awareness, given the social origins and personal quality of so much of the present political leadership.

Very truly yours,

B. BRUCE-BRIGGS,
Resident Consultant.

[Mr. Theobald's prepared statement and attachments; and Mr. Bruce-Briggs' prepared statement follows:]

IMPROVING THE QUALITY OF LIFE

(By Robert Theobald)

Robert Theobald is President of Participation Publishers and primary consultant to the Northwest Regional Foundation both of which aim to inform all those are concerned with creating a more human future of the problems and potentials which face us at the present time. His two latest books are "Beyond Despair" and "An Alternative Future for America's Third Century, both published during spring 1976.

I am delighted to be here with you today to discuss the quality of life in America and the world. The comments that I shall make come primarily from my travels throughout America during the last twelve months which have taken me into every region of the country and given me the opportunity to speak to people holding a wide range of opinions.

One of the ways that I try to get a sense of people's feelings is to carry through a short quiz at the beginning of my lectures. There are two particularly significant items to report. First, it appears that a surprisingly large number of people have begun to alter their life style to reflect ecological and energy realities. Second, and particularly startling, there is almost unanimous agreement that we are not preparing people to live in America's third century through our educational system. This feeling is shared by parents, grandparents, teachers, administrators etc.

As I look at the media, however, and the decision-making processes which presently exist I see them dealing with the questions which were critical in the last thirty years which are no longer central. From the vantage point which I have gained from extended discussion throughout the country, I am convinced that people are willing to confront our emerging problems in new and imaginative ways but that they are not being provided with either the political or the intellectual leadership which they require to be fully effective.

The constant twists and turns of the election process in this most surprising of political years, coupled with the failure of the columnists to keep up with developments, reinforces my thesis. People are looking for new ways of dealing with the problems and possibilities which surround us: they recognize that the solutions of the past are at best inadequate and only too often lead us in wrong directions.

In my testimony today, therefore, I am going to deal with three areas. First, I shall look at the intellectual positions which exist today about the quality and the quantity of life. We shall discover that the disagreements are intense. Second, I shall suggest to you the minimal value changes which are required if we are to rediscover the directions which could further develop the understandings which existed at the time that this nation was founded. Third, I shall suggest the implications of these new values for the policy decisions which you will be making in this and subsequent Congresses and argue that many of the presently agreed directions will actually be highly damaging for the quality of life which we desire.

I must start my testimony by saying that I find it surprising that those of you who are policy-makers are still willing to put up with those of us who claim to be able to provide you with some understandings on which to base your decisions. Not only do we continue to disagree but we change our positions with bewildering speed. I shall therefore go back to the positions which existed about a year ago and then go on to explore the further changes which now seem to be taking place.

The strongest dynamic in thinking about the future over the past five years was started by the report of the Club of Rome entitled "The Limits to Growth." The volume argued that continued growth for even one hundred years would produce insoluble problems from excessive population, excessive pollution, lack of raw materials, energy shortages or some combination of the above. The report caught the imagination of a large part of the idea-moving community and became dominant in a large proportion of academic discussions. The pessimistic conclusions of much thinking in recent years can be traced, at least indirectly, to this volume. Malthus, the nineteenth-century analyst, had been updated and placed in modern-dress using computers: this style of thinking had proved both compelling and, in a strange way, attractive. The report provided an excuse for many of the failures of the sixties and a large number of people were eager to grab for it.

Opposing this neo-Malthusian group, were a large number of thinkers. Foremost among them is undoubtedly the Hudson Institute, one of whose members is present here today. The Hudson Institute argued that the Club of Rome report was simplistic, that there was no reason to believe that new resources would not be discovered as old resources were used up and that it would be possible to provide everybody on Earth with a good standard of living if we were committed to this task. Other thinkers who advanced this view, although they started from a very different idea base, were Buckminster Fuller and Paolo Soleri.

This set of disagreements was closely followed in the media and will be somewhat familiar to you. Meanwhile, off in another corner of the society, there was a different challenge. This is now primarily credited to an extraordinarily widely read book by E. F. Shumacher called "Small is Beautiful" in which he argues that the scale of our technology is wrong and that we should find ways to bring not only our technological systems but also our institutions down to a more human scale.

Seem simplistically, then, one could state about a year ago that there were three primary views in the culture. First, there was a group which was trying to slow down and to redirect growth: some of its supporters argued essentially for a no-growth position. Second, there was a group which argued that if only we continued to develop in the directions which had been created during the industrial era that we should overcome the troubles of the sixties. Third, there was a group which argued that thinking in economic growth terms was our central problem and that we needed to return to a simpler life.

1976 has been significant and dramatic changes in the views of all of these groups. First, at a recent meeting in Philadelphia the Club of Rome made it clear that it no longer was pushing the tough conclusions of the Limits to Growth report. Those who were present at the meeting seemed to be saying that the purpose of the report had been to shock world thinkers and lead them to recognize that there were significant problems ahead. Given the fact that this recognition had now been achieved, it was appropriate to talk about a lessening of the growth rate rather than a fundamental shift in priorities.

This change is the position of the pessimistic thinkers has been paralleled by a significant alteration in the position of the Hudson Institute which was crystalized in a book published in May 1976 by Herman Kahn. The volume argues that both population and production rates can be expected to decline and should continue to do so over the long run but that there is no urgency to the shift and that above all it will be possible to meet all needs throughout the world.

In effect, then, the debate between the Club of Rome and the Hudson Institute suddenly evaporated in the first half of 1976 leading one to wonder what all the sound and fury had been about. Both sides were now prepared to agree that a transition was needed, that it was beginning to take place, that considerable economic growth was still required, that the gap between the rich and the poor countries was significant but not disastrous because it was one—maybe the primary—method of eventually closing down the gap between the rich and the poor countries of the world. We have therefore developed an international trickle-down theory to go along with the national trickle-down theory—it is argued that the way to deal with the problems of the poor is to ensure that the rich continue to do well. This contrasts with the stance of many thinkers that a shift in power relationships can significantly improve income distribution patterns.

The growth-no growth controversy has not closed down with this essential agreement between the positions of the Club of Rome and the Hudson Institute. It has already sprung up in a more virulent form and is increasingly centering on a single policy issue—the question of the construction of nuclear power plants. Should we permit and encourage growth if the only way to do so is to build a large number of nuclear power plants. This has become the question not only in California but throughout the country. Indeed, a major effort was made to turn this into the world issue during the recent United Nations conference on *Habitat*.

In this new growth-no growth debate, there has been a distressing and continuing over-simplification of the issues on both sides. The California referendum which started out, in many people's minds as a way to challenge citizens to think about their priorities has ended up as a no-hold barred fight in which the winner is to take all. It will be my thesis in the rest of my testimony that we cannot hope to deal with the issues which actually confront us in the twentieth century in this way and that we must somehow find more effective decisions-making techniques if we are to have any hope of changing the values, laws, institutions and

styles which have been made obsolete by the on-going change from the industrial era to the communications era.

You may have noticed that I have not so far stated my own perception of the issues that we face. I have not done so because I have been concerned to present the dominant societal viewpoints and the position that I represent is still a minority intellectual stand at the present time. It is my argument that we have reached the central turning point in humanity's history and that we must change from doing the things which seem directly and immediately desirable to us and learn how to manage the world in accordance with the realities of a finite universe. I believe that the failure to understand this imperative in the immediate future will ensure that there is continued degradation in our quality of life and an eventual breakdown in American and world socioeconomic systems.

I realize that the immediate question that you will ask when confronted with this sweeping statement is what I mean when I argue that we must manage "the universe in accordance with the realities of a finite universe." The central thesis is very simple and it results from the argument that both the Club of Rome and the Hudson Institute are now advancing but whose implications they have not understood or accepted.

So long as we agreed on the need for maximum rates of growth and accepted large increases in population, then we needed a culture which was efficiently designed to force economic growth. We created this sort of culture and its accompanying socioeconomic and political systems during the industrial era. Today this society is obsolete. A society which needs to operate within the concept of limits can only do so within a very different set of institutional arrangements. It is therefore our obligation first to understand our new needs and then to create the form of society which can be effective in our changed conditions.

At the present time society assumes that present socioeconomic and political institutions are largely viable and that all we need to do is to make limited changes. I believe that we are faced with the need for totally different patterns of thinking and action. Society also assumes that people who find difficulty in fitting into present social systems need to adapt their behavior patterns: from my perspective the growing breakdown in the world results from the fact that it is not appropriately organized for people to be able to reach legitimate goals for a high quality of life.

Emile Durkheim, the eminent French sociologist, coined a word several decades ago, which was meant to describe the mental state of those who found difficulty in fitting into the industrial society: he argued that they were suffering from anomie: they lacked a name or character which would enable them to be effective. Because we still perceive people in this way, we believe that those who do not fit into the present American and world society should have their characters adjusted. I believe, on the contrary, that in today's conditions, people are suffering from "amondie:" which means that they lack a world in which they can realize their legitimate goals. I am therefore convinced that we confront a very different set of tasks from those which are normally assumed.

What can be said about the basic shifts in ideas and values which are necessary if we are to accomplish successfully a shift from the industrial era to the communications era?

First, we must recognize that it is impossible to act to create an ever greater supply of goods and services within a finite universe. There can be many arguments about the population size and the amount of production which is feasible on this planet: the dangers of excessive population and excessive load on the carrying capacity of the earth are now both so clear that there is an immediate case for reducing the rate of increase in population as rapidly as possible and only increasing production to meet real needs.

In other words, we need to move away from our Western preoccupation with the creation of "more" to an understanding of the idea of enough. One of the ironies of the last thirty years is the extent to which the rich countries of the world have tried to move the poor countries of the world into a socioeconomic system whose viability depends on the creation of new wants, however, peripheral they may be. (This pattern is common to both capitalism and communism: both require people to want new goods and services.)

The capacity to live with "enoughness" has existed in many cultures. It can be part of human nature; the question we must face is whether it is possible to reintroduce this idea to societies which now effectively force most of us to spend all that we make and often more.

Second, we must recognize the inadequacy of the idea of equality, at least as it is presently expressed. Inevitably, the idea of equality leads us to the belief that while "all of us are equal, some of us are more equal than others". This statement of George Orwell in his book "Animal Farm" reminds us that an attempt to create an impossible goal must inevitably lead to social pathologies.

We cannot be equal to each other. Indeed, surely, none of us would want to be equal with each other. Rather we must recognize the inevitability of diversity and learn to glorify in it. We must learn to respect our differences and to recognize that a range of views is as essential for the development of a viable society as a range of organisms is for a viable ecology.

In the past, we have seen differences of opinion as threatening because we have believed that there was a single appropriate way to look at the world and that those who did not share our view of reality were necessarily wrong. Today we are coming to understand that there is no single correct perception: that the way we see reality emerges from our past experiences, our genetic inheritance, our sex and age, etc. Once we recognize that this is true, we begin to perceive that it is highly desirable to be able to learn from people who hold a different view from our own because they may be able to provide us with ideas that we have not previously managed to express.

The third requirement for change is that we understand that attempts to control the behavior of other organisms are usually ineffective. There is a classic story of a man who had a cat which insisted on clawing the curtains. This made the man angry and every time it happened he threw the cat out. It did not take long for the cat to realize that the way to get out was to claw the curtains.

As we look at the history of the sixties, we find that all too often the people who have tried to control social systems have taught others to behave in anti-social ways to achieve the goals they wanted. There is hard evidence that ghetto-dwellers and people in prison have learned to provide sociologists and other researchers with exactly the evidence they want while quietly laughing at them behind their backs.

Effective alterations in action patterns will only occur when people are involved in the decision-making process. Attempts to force change will often backfire: even when they do not, the desired alteration will only be maintained as long as control can be maintained. Recent years are littered with experiments which worked so long as the people who started them stayed around but which ceased to be effective the moment they left.

The fourth requirement for change is to recognize that the destruction of our basic value systems which has continued throughout the industrial era is now making it impossible for societies to function effectively. When I was growing up in the nineteen forties, I was told that people lived by religious values if they were weak people but they would abandon them when they know what they were doing.

It was only when I was learning systems theory that I discovered that the classic religious values of honesty, responsibility, humility, love and a respect for mystery are basic necessities for the effective functioning of any system. Depending on one's prejudices, therefore, it is valid to say that religions are primitive system theory or modern system theory is primitive religion.

The critical conclusion that we must draw at this point in time is that the clash between religious and intellectual thinking that has been assumed in the recent past does not exist. Religious thinking and intellectual work should reinforce each other rather than cut across each other. If we could get this idea into our heads, we should already have made major strides toward developing a viable international order.

I am aware that this set of changes has been described too briefly to be fully convincing. I have no hope that I can today provide you with a full picture of the implications of a model which argues that we are moving out of the industrial era into the communications era. Rather, I can only hope to open up some of the issues which we must consider if we are to have any effective way of bringing about change.

I want therefore to consider four of the central policy issues, economics, health, justice, education, and to consider the alterations which would occur if we did move from an industrial era preoccupation with the standard of living to a communications era concerned with the quality of life. The proposals that I shall make here are drawn directly from my just published book *Beyond Despair*: it is, of course, impossible to provide the background for the reason-

ing in this testimony and those who are interested should refer to the book itself.

The first reality we must understand is that there are no real options in policy-making so long as we persist without present institutional arrangements. We have a socioeconomy which operates on the basis that the appropriate way to provide resources for people is for most of those between the ages of 20 and 60 to hold jobs. Given this reality, we must promote economic growth because this is the only way that we can ensure the necessary increase in jobs and thus the availability of income to those who need it.

The question which we urgently need to face is whether the best way to get our urgent work done is to structure it into jobs. J. M. Scott, an anthropologist, has raised the relevant issue well when she states that in today's conditions "most people are so busy doing their jobs that they have no time to work". Let me be clear. There is obviously enough work to go around. The question we must answer is why we are unable to create ways in which unemployed people could engage in valuable and urgent work. Given the fact that our socioeconomic system has failed to meet the work needs of individuals and the society over an extended period of time, we need to think about the reasons and the options.

We have, in fact, reached this point. There is rather widespread agreement that the operation of the job market is no longer satisfactory and that some significant change is required. The position which is held by most of those in Congress and most of the Democratic Presidential Candidates is that we should ensure that everybody would be guaranteed a job if the normal operation of the economic system does not provide enough jobs for those who require them. It is this position which was incorporated in the Humphrey-Hawkins bill.

This bill is potentially highly destructive of American society. The long-run results of such a bill were set out in a remarkable book published many years ago by Kurt Vonnegut called *Player Piano* in which he demonstrated the danger of trying to control both the consumption patterns and the job activities of citizens. The Humphrey-Hawkins bill would inevitably lead to such a result for it can only work through ensuring increasing control of the whole socioeconomic system.

We are trapped in our present patterns of thinking which demand more, which demand that people be controlled, which reject the idea that people can be responsible. It is extraordinarily unfortunate that we continue to listen to Keynes' disciples rather than returning and looking at Keynes' own work. He knew that as we reached our present ability to produce we should "be able to rid ourselves of many of the pseudomoral principles which have hag-ridden us for two hundred years, by which we have exalted some of the most distasteful of human qualities into the position of the highest virtues. . . . All kinds of social customs and economic practices affecting the distribution of wealth and of economic rewards and penalties, which we now maintain at all costs, we shall then be free to discard."

Our socioeconomic system is obsolete because it does not provide the individual, who is prepared to work to deal with the personal and social needs of our time, a fair opportunity to do so. We are still caught up in believing that the only true wealth is that produced in the form of goods and tangible services. In today's world when people are crying for more effective learning experiences through interpersonal relationships we need to shift our methods of distributing resources.

What should be the first steps in this direction:

first, we should provide Basic Economic Security (a guaranteed income) to all. This should be sufficiently large that it would permit people to work in ways which are important to them without having to be part of the industrial era economic system. Such an income would not be lavish and those who chose to work outside the industrial era system would only be able to do through sacrifice.

second, we should provide an income base for the middle class so that when they lose their jobs they do not fall immediately and directly into poverty. I have called this proposal Committed Spending and believe that its urgency increases as we come to recognize the degree to which many of our institutions are overstuffed.

third, we need to simplify radically the tax system. All exemptions and deductions except for necessary business deductions should be removed and capital gains and incomes should be taxed at the same rate.

The normal objection to such measures as these is that they cut into the rates of growth. They will therefore be automatically rejected if we are still committed to a culture which demands more. In the context of an "enough" culture they are clearly relevant. I would stress, however, the fact that the pace at which these innovations are achieved is one of the most critical questions which must always be considered. Almost all of the measures I shall suggest need a phase-in period.

Let me now turn to health. The general opinion in the country is that the only forward option now available is to move toward national health insurance. I would argue that this will have very little favorable effect because that while we hope everybody can have "quality healthy care" the hard reality is that we cannot provide the "best" health care to everybody.

It is, indeed, incorrect to argue that we have a health system in this country. Rather we have a system which is centered on sickness and which will pay extraordinary amounts to cure people when they are sick and very little to keep them well or to help them to keep themselves well. We need to move away from a "curative" health system to a "promotive" health system which will spend its time and money to help develop skills which will keep people healthy.

We need, in effect, to ensure the development of an intelligent model for Health Maintenance Organizations rather than national health insurance. National health insurance will lock us into a health delivery system which ensures endless increases in costs and no end to the present problems. A movement toward promotive health care would permit us to rethink the issues of health in ways which will minimize the burdens of sickness on the society.

In developing Health Maintenance Organizations, however, we shall be confronted with the issue of defining death in terms which recognize the potentials of our modern technologies. We now know that it is possible to keep people alive even though there is no real chance of them operating again as full human beings. We also know that this power will be increased in coming years and decades. There is an increasing cry for a right to death—a recognition that there may come a time in anybody's life when they can no longer function. The Quinlan case has brought home this set of issues to us: we have been extremely fortunate as a society to have a couple of parents with the dignity and the patience to force us to look at the issues involved.

I am convinced that the limitations of resources that we are encountering will force us to introduce a right to death. The question that we need to confront now is whether we shall introduce this right in a way which provides the individual, family and friends with the information and the capacity to make intelligent decisions in this area or whether we shall place it within the responsibility of the professional because of our fear that people are not competent to make decisions for themselves.

Let me now turn to the issues involved in law and justice. All of us have become deeply conscious in recent years that there is indeed one law for the rich and another for the poor. We invoke the statement that "people have suffered enough" when we are talking about the powerful but never use it for those who survive in the ghetto or the poor areas of the country and have suffered all their lives.

We have not been prepared to recognize up to the present time, however, the fundamental factors which lie behind our differential patterns of justice. We sometimes talk in terms of the need for punishment: an eye for an eye and a tooth for a tooth. This model is predominantly used in our patterns of sentencing when we work with the poor and the powerless.

The second thread which runs through our justice system, however, is the possibility of rehabilitation. When the rich and the powerful get caught up in the justice system it is this theme that we tend to emphasize.

Which of these views is correct, in light of the new requirements which I set out for the operation of the communications era? If we opt for the punishment model it increases the frustration of all those involved in the system. There are studies which show that the prison system is radically dehumanizing for all those involved in the system whether prisoners or guards. Nevertheless, if there is any consensus at the present time it is that the rehabilitation system has failed and that we must move toward punishment. But there is clear-cut evidence that rehabilitation, like religion, has never been tried. We have swung from a naive belief that prisoners will reform themselves to an equally naive belief that punishment will deter. We have spent only a miniscule amount of our effort

trying to change the perceptions of people about the world in which they live and thus enabling them to live outside the criminal culture.

Indeed, there is little chance that we can convince people that crime does not pay when it so obviously does. The very fact that it is the "successful"—i.e. rich and powerful—criminal who usually obtains the short sentence makes any education in this area very difficult.

Where should we concentrate our attention:

(a) we need to find ways to prevent young people from committing criminal acts by ensuring that there is enough legitimate challenge in their lives. We have not tried as a society to provide ways for young people to test themselves as they grow up in our more and more interdependent world. If young people do get into trouble for the first time, a maximum effort needs to be made to keep them out of contact with others who have significant police records.

(b) we need to ensure the possibility of redemption. For the first time in human history, a police record achieved through one error or risk can follow one all one's life and make many forms of activity impossible. We should develop routes to wipe out police records if an individual ceases to be involved in criminal activities.

(c) we need a legal system that is more designed to discover the truth and less controlled by forensic ability. To provide "batting" averages for defending and prosecuting attorneys shows that we see a trial as a "sports contest" rather than as a way to decide whether or not a person was guilty of a certain crime.

(d) we need to face the issue of what we should do with the hardened criminal. While it is true that his or her criminal characteristics are, at least in part, the result of the failures of the society we must become more realistic about the need to protect the society. If this is true, we must ask ourselves whether the death penalty is necessarily a more cruel and unusual punishment than imprisonment for all of the rest of a person's life.

We are thus led throughout consideration of the legal system to examine our educational system and to ask ourselves why so many young people are destructive today. Why do we fail to provide people with the skills and the desires to work within the framework of the society? If the thesis of this testimony is correct, people fail to be positively involved because of the problem of "amondie"; the lack of a world in which they can meet their true needs for dignity and a chance to develop themselves to the fullest.

Instead of today's conventional argument, therefore, which suggests that people are inherently lazy bums and only work when forced to do so, I am suggesting that there is a drive to growth in all of us which is frustrated by the organization of the society. I believe that the reason our schools are doing so badly is that they underestimate very seriously the competence, drive and concern of the students within them. I am convinced that most of our school problems emerge from the sheer boredom of young people who are very seldom challenged in the classroom.

A Marshall McLuhan story tells it all. Two kindergarten kids are walking down the streets and identifying the planes as they fly overhead. As they come to the school room door, one turns to the other and says: "Now, lets go in and string those darn beads." How much of the activities in schools and colleges is equivalent to stringing those darn beads?

The conventional wisdom in federal and state educational organizations now appears to be that we should concentrate our declining financial potentials on vocational education so that everybody can have some skills to get a job and also on the traditional four-year college. Despite the rhetoric about life-long education the trend is clearly away from providing significant funding for people to learn those skills which they need throughout their lives. This reality is particularly clear in the community colleges where I have been working intensely over the last 15 months.

I do not believe that we shall make significant progress in dealing with our educational problems unless we recognize that nothing less than a fundamental change in our thinking about the life cycle of the individual will enable us to come to grips with present challenges. In other words, I believe that the idea of continuing schooling through 16 or 18 or 20 or 22 ignores a reality which Plato brought to our attention over two millenia ago. Young people are not particularly interested in formal education in their teens or early twenties. They want to get out and test themselves: to discover who they are and what they can do.

If this is the case, then we need to rethink fundamentally what people should

do throughout their life span. Instead of preparing for school, for a job, for retirement and for death as is the case at the present time, we need to create a new life pattern in which people learn and work in individually chosen and developed patterns. We need to permit wide diversity in styles and patterns. Fortunately, the new communication technologies give us the capacity to coordinate such differing models of behavior.

What types of changes should we begin to make, then? First, we should cut back on the laws which compel attendance at school and try to limit child labor abuses. The costs of these laws in preventing individual development are now higher than the benefits. There are laws on the books which could be applied if young people are abused without preventing activities—such as cherry picking in California—which provide pleasant activity to all concerned.

Second, we should give a far higher priority to funding continuing citizen education. Despite our rhetoric, there is little largescale funding for the education of adults. And yet, without it, there is little chance that the drive toward citizen involvement and participation can be effective. It requires an act of faith to believe that democracy is possible at all. It requires total stupidity to argue that democracy is possible with an ill-informed citizenry. Unless we can find better ways to inform people about the changes in our world which are developing as a result of the coming of the communications era, there is no possible way in which effective governance will be possible.

Citizen participation, neighborhood power, community development are all words for one of the most significant, most ignored and least understood movements of our time. More and more organizations are putting ever greater time into the development of these patterns of activity. If we are to understand what is going on, however, we must recognize that there are three very different models for citizen participation activities and that there is little understanding of the critical differences.

Citizen participation can simply be a way to get agreement with ideas which have already been developed by the existing decision-makers. Citizens are provided with a set of questions and an overall pattern of participation which provide them with little opportunity to raise new questions. No systems are set up to deal with those people who break out of the boundaries of the study and they are therefore effectively ignored. Many of the best known of the citizen participation and futurist models are heavily flawed by this approach.

At the other extreme, it is often argued that there is no need for a decision-making group at all. It is suggested that modern technologies provide the opportunity for all decisions to be made on the basis of instant referenda: each person should cast his or her ballot on all questions of importance. This proposal falls down because it is naive to believe that people can provide the right answers to questions which they do not understand.

The central position between these two is that all decisions should be made by the most competent group which can be assembled. There will, at any moment in time, be a group which is in charge of making decisions on a particular subject but the members of the group should be the most knowledgeable that can be assembled at a particular time and should always be on the look out for new people who can be brought into the system to help with the decision-making process. As opposed to the present time when people try to cling to power, there should be a willingness to move out of the decision-making process and to try to find younger people who can take over the load. The reality behind this statement can be discovered by examining the work of those people who are developing new leadership models and also those who are working in new styles of leadership roles. This question is examined further in *Teg's 1994* by my wife and myself.

The central dilemma which is going to emerge as new, effective decision-making groups develop locally is that they will challenge existing federal, regional and state laws which limit the ability of local groups to choose their own patterns of behavior. There are, of course, some laws and regulations which do require to be national, regional or statewide in scope; there are many other laws however, which were passed before we understood the importance of diversity in styles of behavior in various communities. It is my conviction that one of the primary concerns of the next few years will be to deal imaginatively and creatively with the growing desire of local groups to regain power.

The types of difficulties which will emerge are demonstrated by the busing and pornography questions. In the first case, the decision has been made to en-

force a set of federal standards: in the second, local option has been held to prevail but first amendment rights have also been held to apply. From my point of view, the consequences in both cases have been close to disastrous.

What does all this imply for the Congress? I can already draw a number of conclusions from the statements that I have made earlier.

First, many of the sacred cows of congress and the country—full employment, national health insurance, stiffer justice, back to the basics in education—are based on the belief that we can make the industrial era system work. They are not only inappropriate in the emerging communications era but the passage of bills designed to attain these ends would make it difficult or impossible to attain the quality of life which is now feasible.

Second, one of the primary jobs of the next congresses will be to dismantle many of the regulations and laws which have been built up. The proposed sunset legislation is an obvious attempt to address this question: however, there is no way that this legislation can be effective without a shift in our thinking toward the new values and styles which I have described above.

Third, and this takes us into areas which I have so far touched upon, Congress will have to learn to make decisions which take note of the complexity of the total situation of the society rather than dealing with one factor. Congress at the present time reflects the organization of both our thinking and the rest of the society: we believe that it is possible to run things effectively by thinking things apart. We now know from the work of Bohr, Heisenberg, Einstein and others that we need to find ways to think the world together again.

The reality of this point can be illustrated in many ways but perhaps the most effective route is to consider the triangle of forces: economic growth, ecological balance and energy conservation. We argue that we are trying to achieve all three of these but we all know that it is impossible to maximize more than one factor at once: indeed we are finding out how true this is at the present time.

I shall examine the results of this confusion at only two levels although the problems exist at the international, national, regional, state and local level. From the point of view of the individual, the problem is symbolized by the fact that he or she is asked to buy a car in order to stimulate the economy, not to run it because this wastes gasoline, and if it is run to use a catalytic converter to save the environment even though this reduces gas mileage.

The example may seem too slick at first sight but in reality it does reflect the fundamental failure of our decision-making system. Congress possesses different committees which have different responsibilities: for ease of analysis we shall suggest that there are some that promote economic growth, others that are concerned with ecological balance and still others that are concerned with energy conservation. Each of these sets of committees does its best to pass policy that is relevant to the concerns which it is meant to handle.

Unfortunately, however, there is no way in which—given present attitudes—it is possible for economic growth to take place without using more energy and having some undesirable impact on the ecology. The results of the work of each group of committees therefore have large-scale, but largely unconsidered, impacts on the activities of the others. Because our primary commitment is to growth in order to provide jobs, there can be no truly effective work in ensuring ecological balance and energy conservation.

There is absolutely no way out of this dilemma with our present patterns of thinking and our present commitments. So long as we are committed primarily to a job-based society we are locked into maximizing economic growth and we cannot pay any real attention to the quality of life. We are driven, at this time, by the need to increase consumption in order to provide jobs for all and there can be no change in this situation until we commit ourselves to an alternative indicator for the success of our societies.

I would agree with the implied thesis of this set of hearings that the appropriate indicator would be the quality of life. However, I hope that it is now clear that the optimization of the quality of life implies a complete change in all of our ways of thinking and action. In other words, we face a shift in conditions as we move from the industrial era to the communications era which is even larger than that which occurred as we moved from the agricultural era to the industrial era. Information about various aspects of this switch is available from the Northwest Regional Foundation, P.O. Box 5296, Spokane, WA 99205.

This brings me full circle to the different views of the future which I set out

earlier in this speech. The proposals and directions that I have proposed in this testimony are found naive, unrealistic and dangerous by analysts who have different views of the future than mine. I, on the other hand, find that while many of the points of other schools of thought are valid and important, they have not followed through on the implications of their own arguments. Unfortunately, for those of you who make policy, you must choose for you will either concentrate on a full employment bill or on a guaranteed income: on national health insurance or Health Maintenance Organizations: on providing people with a sense of self-worth or on building prisons and rehabilitation centers: on training or on education for societal understanding.

Where does the truth lie? Obviously you will not find agreement in this room or indeed anywhere in the country. I would suggest to you therefore that the most urgent task is to develop new styles of information gathering, creating and disseminating which reflect the width of the disagreements which exist today rather than try to come to a premature conclusion about appropriate decisions. I have developed a framework for new styles of documents which we call problem/possibility focusers and have begun to create problem/possibility networks which are engaged in creating them. I attach information on these documents and the ways in which they are created as an appendix to this testimony.

Perhaps even more important than the need for new institutional arrangements is a shift in our own ways of thinking. At the present time, when we disagree with somebody, we "know" that we are right and that the other person is wrong. We therefore all feel justified in playing whatever dirty tricks are necessary in order to ensure that our "good cause" wins. We have seen this sort of manipulation of information in such cases as the supersonic aircraft and the present nuclear debate.

We now know from a wide range of studies that there is no single, clear-cut truth. Rather each one of us sees a partial truth through a set of distorting lenses which result from our age, our sex, our color, our class and our experience. The greatest step that we could take to begin to make more effective policy would be to accept that other people might be right in their perception of the issue. Once we did this we would devote more time to the resolution of disagreements and less to heightening already existing conflicts.

These hearings are themselves an example of the dilemma that we confront. They deal with the central issues of our times. But they could only be set up as a special subcommittee panel to a subcommittee. We shall have no real hope of moving on these issues until Congress realizes the centrality of these concerns and the necessity for them to be understood if we are to build on the work of the founding fathers.

I am aware that the Bicentennial has become a bad word in many parts of the country. However, I remain convinced that we should have used this event to show people that we face in 1976 problems and possibilities which are at least as serious as those which existed in 1776.

I have now worked in the United States for almost 19 years. I came here in 1967 for one year in the belief that one could not understand the world without understanding the United States. I have stayed because I have become convinced that only the United States might be able to deal with the issues discussed in this testimony. However, success in this effort will require that we recognize its centrality now.

COMMUNITY DEVELOPMENT—PROCESS FOR CHANGE

(By Susan P. Virnig)

Start with a federal law which will give money to a city to make physical improvements in its environment. The law has about 40 pages of regulations, all written in fine print (of course). Add a city government which has decided to go beyond the bare requirements of citizen participation which the law specifies. Throw in the fact that large numbers of citizens are convinced that they can have no effect on the decisions about how the money is spent, or about much else in the city for that matter. Don't overlook the people who have misread the law (and the fine print) and based on their fear of gestapo-like housing inspection, have begun an initiative petition to prevent the money from being used at all. These are the ingredients of an effective citizen participation process which has taken place in Spokane.

During the three month process, emotions have ranged from widespread apathy to great enthusiasm, from deep bitterness to the beginnings of trust. The city asked its residents how federal funds ought to be spent to improve the community. Residents responded reluctantly at first but as the city began to keep faith during the process, trust developed. What happened? And why did it work?

In August 1974 Congress passed the Housing and Community Development Act (HCD). This Act entitles cities throughout the country to grants based on their population and the extent of poverty in the city. The funds are to be used primarily to improve the physical environment, though under certain circumstances they can be used to provide social services as well. The passage of this act coincided with the creation in Spokane of a Quality of Life Council designed to increase citizen input to local government. This Council is an official advisor to the city council, consists of 46 residents of the city and has been in the planning stages for two years. Overseeing the process of applying for HCD funds became the first task of the Quality of Life Council.

"We voted down the airport and they built it anyway. We voted down the Expo and they had it anyway. Is this just something else they're going to force down our throats?" "This neighborhood needs a lot for sure—but not federal funds."—neighborhood exploring

Spokane has been reluctant to participate in federal programs in the past. There is a strong fear of the intervention of centralized government and a generally held understanding that Washington (D.C.) does not know best. On a local level, although bond issues to finance both a new airport and the world's fair failed, in one way or another both projects were successfully undertaken. Events such as these led some people to conclude that "They"—an amorphous and undefined group of people—ran the city and that the individual couldn't effect any change.

Feelings such as these have not disappeared: there is a group of citizens in the city who firmly believe that all federal funds have intolerable strings attached to them and that federal control is inherently evil. They allege the HCD Act will empower the city to inspect any residence without warning and to demand of the owner an immediate repair of conditions which are not up to code. They have managed to obtain the necessary number of signatures to force a vote on the HCD program; the special election will take place in early June.

It's very difficult to reduce the complexity of a process involving various city departments, several consultants and three months of citizen meetings. What follows is an overview rather than any attempt to be comprehensive. January was a time for informing the public about the HCD Act, February for neighborhood input and March for the appropriate apparatus.

"A black woman invites me into her well-kept home. Asked what could be done to improve the neighborhood, she leads me over to her television. 'Run your finger across the screen,' she commands. I do; my finger is gritty. 'I just dusted that T.V. yesterday and this is the middle of winter. You come back in summer and see what it's really like. None of the streets around here are paved and we choke on the dust.'—neighborhood explorer

In January, neighborhood "exploring" took place in each of five neighborhoods suggested as most likely to need funds. Volunteers talked to shopkeepers, knocked on doors and visited with people on the streets. Residents were told that the HCD money was available and asked how they thought it could be used to improve their neighborhood. They were invited to a community workshop and encouraged to bring their friends.

Northside Community Workshop. People sitting around in groups of six to eight, asked to come up with needed neighborhood improvements. The buzz of conversation. "The ruts in my alley are so bad the garbage trucks can't get through. The dogs get into the trash and it's strewn up and down the whole block." "You should see the road in front of my house—the potholes are so big I park my car on a side street and walk the extra block."

In late January a public hearing was held to decide which two neighborhoods ought to receive priority funding in 1975. Over 350 people came to a council chambers designed for 125. For nearly four hours citizens testified; they talked of broken sidewalks, of dusty roads, of the need for daycare and senior citizen centers; and they talked of their hope for a better city.

"The swimming pool at Cannon Park is the only one around for miles. In the summer the pool is literally wall-to-wall-kids. They end up fighting because it's

so crowded and come home in tears. We need more recreational facilities for our children."—public hearing

In February the two priority neighborhoods (each about 10 blocks by 20 blocks) were asked how they would spend \$140,000 to improve their neighborhood. Public meetings were held; task forces were formed; small groups met intensively; compromises were hammered out and a clear report was given to the Quality of Life Council from each area.

"Look, we already have our alley paved and our street, too. But there are other people in this neighborhood who need paving—and they can't pay for it. If we can go along with the compromise on streets, the rest of you ought to be able to, too."—neighborhood workshop

During March these neighborhood reports passed through the approval apparatus and were adopted as they were to become the central part of the city's HCD program.

A primary concern of both neighborhoods came to be called a "multi-purpose multi-generational community center," but because the funding for 1975 is insufficient, such centers were recommended for 1976 or 1977, when funds double and treble. Paving came next: the neighborhoods together allocated just over half of their funds for street paving and alley improvements. Both decided to help small neighborhood centers already in existence by allocating equipment to them that could be moved to a multi-purpose center once it's built. One neighborhood chose to put half of its funds into recreation: they want "mini-parks" built in vacant lots for use by the very old and the very young; they want the riverfront (which bounds the area on two sides) cleaned up and biking and hiking trails put in. Many residents came up with lots of ideas about implementing their projects. To validate the planning process requires that the program itself be carried out with extensive people participation. At this point it looks as though Spokane is committed to doing that.

Why has this participation process worked? many factors were involved:

The city hired consultants (including Northwest Regional Foundation) to inform the public of the HCD program and to facilitate their participation in the decision-making process. The consultants acted as intermediaries; they were committed individuals who believed in the program and yet weren't part of city hall and thus not subject to normal patterns of distrust.

An extensive public information campaign was carried out and the news media were very cooperative.

Neighborhood networks were identified and key people contacted; the word got out and participation levels were high.

All public workshops were moderated by the Leadership Institute of Spokane, a group skilled in people interaction; those opposed to the program were always given a chance to speak and conflict was thereby diffused.

Once people had reason to believe that they would be fairly heard they got enthusiastic; there is something very exciting about shaping your community.

Finally, a number of people on the Quality of Life Council and in city hall were committed to following resident recommendations rather than formulating their own.

Perhaps the most important reason, though, is that people began to hope—they began to believe that the whole thing might just possibly work; they got to know people in government who cared; they come to see themselves as having some power to affect their own community.

During the final public hearing on HCD the two priority neighborhoods invited the Quality of Life Council and all city people who had worked on HCD to a party. It was undoubtedly the first time in Spokane's history that city officials were invited to a party at a public hearing! At the old-fashioned pot-luck one 78 year old grandmother commented:

"You know, the best thing about this program is that I've made so many new friends. We all live in the same neighborhood but none of us had met before. We've had such good times at our meetings."

Perhaps more significant than anything the money might do for Spokane is this: HCD has been a catalyst for people to sit down together and realize their hope for a better city.

A detailed description of the citizen participation process is available from Northwest Regional Foundation, Susan Virnig, NRF's Program Director, was the coordinator of NRF's HCD activities.

COMMUNITY INVOLVEMENT

THE ISSUES

Written by the staff of the Northwest Regional Foundation, this article is intended to bring up some of the issues of community involvement. What do people really mean when they talk about citizen participation? What are their assumptions and what are some of the implications of the different approaches? The paper discusses three different types of citizen involvement: citizen input, electronic democracy and new-style leadership. Which is the closest to your model? What do you think of the other models? This paper can help clarify your own views on citizen participation; it can also be used as a starter or focus for dialogue on citizen participation.

Over the last hundred years communities have gradually lost control of their own directions and decision-making powers. Many people, confronted by complex systems of elected and bureaucratic officials, feel powerless to affect decisions. With the exception of the small number of people who vote, and the even smaller number of people who are active in community affairs, most people believe they "can't fight city hall". Massive governmental bureaucracies have stepped into the void creating giant systems that become more and more remote.

THE RATIONALE FOR CITIZEN INVOLVEMENT

This enthusiasm for citizen participation reveals a large-scale change in our attitudes. Until recently, we believed that our political structures were capable of making good decisions. Now, after Watergate and mini-watergates in states and neighborhoods across the country, people are demanding that they be involved in making the decisions which determine their direction of their community.

However, in the last ten years, there has been a beginning movement back to citizen participation. Today, the idea of community participation has become almost a "motherhood" issue. Everyone is in favor of participation and there are almost as many ideas about effective ways of encouraging participation as there are "experts" in the field. Communities must decide which ways are really effective in ensuring opportunities for people to participate in creating their future.

As people have moved in this direction, a body of theory has grown up to rationalize what people have already decided. Many believe that it is impossible for one person to make a good decision for another, but that an individual can help or facilitate the decision making process of another by providing him/her with relevant information. Similarly, many believe that a bureaucratic system cannot really understand what the citizens it is supposed to serve want for their future.

As a result, an ever broadening range of techniques have been developed to permit people to state what they want. We have polls of all types: some are technologically sophisticated, others are not. Dialogue skills make it easier for people to talk across cultural and class boundaries. Television can be used to clarify disagreements. However, behind all the techniques lie some fundamental questions about the aims of citizen participation.

THE APPROACHES TO CITIZEN PARTICIPATION

There are three basic approaches to citizen participation. First, there are those who see a citizen participation which provides better information to existing decision making systems so they can be more responsive to citizen needs. This can be called the "citizen input" model. Second, many see great potential in modern technologies and believe that large-scale electronic citizen democracy has become feasible; this might be called an "electronic democracy" model. Third are those who believe that neither view is entirely valid. They say we need to create new, more responsive and responsible decision-making systems which permit those who are most active and informed to be involved in the decision-making process where they have skills and commitment. This can be called the "new leadership style" model.

1. Citizen input

Some of the best-known existing citizen input activities are *Goals for Dallas*, *Alternatives for Washington*, and *Iowa 2000*. These programs have involved more people, more intensively in thinking about their futures than any other programs.

In these and similar programs, citizens are provided with a carefully selected set of issues which they are asked to study. The purpose is to decide the priorities for the city or State for the coming years and decades. Once the choices have been made by the citizen, existing private and governmental structures take on responsibility for ensuring the goals are met.

Supporters of this approach argue that it provides clear information about citizen concerns. They can point to changes in direction which are a direct result of these activities. These programs entail a minimum of waste and people can understand exactly what the program is intended to do.

Those who believe in the possibility of electronic democracy argue that this type of exercise is almost meaningless because it doesn't change existing decisionmaking patterns at all. They feel that what they describe as the over-structuring of the whole process (i.e. the alternatives presented for study are carefully selected by those in power) makes it impossible for the real concerns of the people to surface.

Those who are looking for a new type of leadership believe that nothing significant will happen until there is a change in the decisionmaking process. They want to find ways to involve more people with skills and drive in the actual decision-making process—people who are largely locked out by present electoral and bureaucratic procedures.

2. *Electronic democracy*

For many people, the ideal democratic form was Athenian Democracy where everyone met together to make decisions as a group. These people understand the extraordinary potentials of computers to permit a variation on this all embracing democracy. In effect, they suggest that government be run by instant, and continuing referenda. People could and would voice their views on population, abortion, famine, and other such issues.

They argue that if people could state their views on the urgent problems of the day, appropriate directions could be determined on the basis of referendum results. They assume that the people have a clearer sense of necessary directions than the leaders and they feel that leadership is unnecessary. While the technical problems are formidable, they are not impossible and the costs for a working system would be reasonable.

Those who believe in citizen input often reject this model because they don't believe it is possible for people to make intelligent decisions; they believe that there has to be a leader to make sure that people move in the right direction.

Those who believe that the present decision-making process needs remodeling also reject this approach because while they believe that people can make intelligent decisions about directions for their own lives, they also believe that the formidable tasks of moving us in new directions require special skill and competence. They feel some situations call for leadership and that leadership continues to be necessary even though its style needs to be changed.

3. *New leadership styles*

Those who want to develop new leadership styles argue that the breakdown of our society comes from both the excessive concentration of decision-making power and the fact that authority is given to those who hold positions rather than to those who have appropriate knowledge and competence. They see community involvement as opening up ways for competent people to become involved in decision making.

This new leadership is more flexible than current leadership: it changes and adapts as our situation does. In this view a community is functional if it can find those who can work successfully on a problem or possibility as it emerges, spend as long as is required to come to some successful decision, and then be willing to disband. It means one works where one can: where one has competence and a willingness to commit oneself. A functioning community can organize itself rapidly and effectively to deal with disaster because it is not dependent on titles for organization, but rather it works with available skills.

From the point of view of the citizen input model, such a view of community involvement is messy: the process of trial and error required for people to find where they can take on responsibility seems unnecessary or even threatening. They do not understand the criterion for success, because community involvement activities of this type seldom result in any major, coherent body of knowledge and success is measured in terms of better interconnections in the community, more effective leadership and more leadership potential.

Those who believe in electronic democracy do not see a significant change in the system with a new leadership style. They see the argument that the leadership structure is now open instead of closed as a cop-out.

Developing any citizen involvement model is going to require choices between models presented. Those willing to be involved will have to make the choices. We all know that the end result of any decision is not necessarily the one aimed for; in the sixties our efforts to create a more humane society often ended in less humanity. Those of us who are interested in doing something which will work well need to spend some time thinking about what we really want to achieve.

A number of programs and techniques for citizen involvement have been devised in the last few years. Some of these are listed below. Later issues of Futures Conditional will carry detailed information on some of these.

PROGRAMS

1. Goals For Dallas was one of the original major goal setting programs. Contact: Bryghte Godbold, Goals for Dallas, 825 One Main Place, Dallas, TX
2. Iowa 2000 demonstrated an effective state-wide program in early 1974. Contact: Dennis Nagel, Office of Planning, 523 East 12th, Des Moines, IA.
3. Alternatives For Washington was a comprehensive and complex state program initiated in the summer of 1974. Contact: Floyd Argersinger, OPPFM, House Office Building, Olympia, WA 98504.
4. Century III in Media, Pennsylvania is the first of a series of programs for small communities across the country. Contact: Clark Wilson The Institute, Box 174 Route 1, Dickerson, MN 20753.
5. Vermont Tomorrow began in 1972 as an attempt to future courses for the state and nation. Contact: Dave Goldberg, Vermont Tomorrow, Inc., 26 State Street, Montpelier, VT 05602
6. Housing and Community Development Act of 1974 requires citizen participation for application. The City of Spokane has developed a unique process. Contact: Vaughn P. Call, City Hall, Spokane, WA 99201
7. Citizen Involvement Network is working with the Bicentennial Administration to encourage citizen involvement. Contact: John N. Gentry, CIN, 1211 Connecticut Ave. NW, Washington D.C. 20036

TECHNIQUES

1. Feedback, a primer developed on polling and feedback techniques is available from: Harry Stevens, Participation Systems Inc. 20 Lakewood Place, Troy, NY 12180
 2. Tellback, an analog electronic device for instant response has been developed by Tom Westbrook, W 1004 18th, Spokane, WA 99204 and the Community Dialogue Project makes use of a digital device designed by Tom Sheridan, MIT, Room 1-110, Cambridge, MA 02139.
 3. People Fairs are a new project of the American Lutheran Church. Contact: Norm Fintel, ALC, 422 S. 5th, Mpls, MN 55415.
 4. Computer Balloting techniques have been being developed by Edward Corwin, 200 Central Park South, New York, New York 10019.
- See the February 1974 issue of Futures Conditional for further information.

Conversation With Robert Stilger

Robert L. Stilger, when he's not skiing down the slopes or hopping off to Japan, occupies himself with being the executive director of Northwest Regional Foundation.

Nancybell Coe now edits *Futures Conditional*, a natural outgrowth of her work as a sometime composer, camp cook in the Yukon, medical research technician and general factotum for F.C. in Arizona.

Roseanne Nolan fled 20 years in the classroom and landed in the F.C. office where her classroom discipline has proved to be a valued dimension.

ROSEANNE NOLAN: Bob, many people today are talking about "networks." Could you define that term for us?

ROBERT STILGER: When I talk about communication networks, I mean the lines, or channels, that can be built and strengthened between people with similar concerns. I think the key concept is: "How do I find people who share my concerns? How do I begin to work with them to create alternatives in our common concern area? How can I find people and resources to enlarge my own vision of the future?" That's a communications network. You can have a lot of other networks too, like transportation networks or networks for delivery of human service.

NANCYBELL COE: Then what part would you say networks play in defining a successful community?

RLS: Well, I'd say a successful community is one where every individual has relatively easy access to the various networks, the resources he or she needs at a given time. Some people say a good community is one where you can reach anyone you need with three telephone calls. I wouldn't want to put a numerical definition on it, but I agree with the concept.

RN: What do you see as the major barriers to this?

RLS: I think we have evolved to a point where most communities are a collection of discrete and non-connected elements: you have the business community, the religious community, the educational community, etc. There is a tendency for people within these various groups not to communicate with each other, to form policies by their day-to-day actions that are isolated from each other, and we find a subsequent development of policies that are contradictory. That makes it impossible for an individual to reach into that maze of contradictory directions to find what he or she needs. That contradiction is pushed further by the fact that many people live within several of these groups, but as soon as they enter one group, they divorce themselves from the interests of the

other groups.

Someone once said that it is really inappropriate to look at a human settlement as a community; it's a collection of communities within a geographic boundary. But unless there is good communication between those communities, between the people making policy and determining directions, a certain degree of entropy inevitably develops in the human settlement, making it less livable.

RN: How can you change that?

RLS: I don't really know. You can get into all the normal talk about new patterns of communication and trust, or you can talk about building smaller, more decentralized systems within a community. You can talk about the need to de-bureaucratize City Hall, or the School Board or whatever else. I think it really comes back to finding ways that people concerned about directions in their community can come together to look at and create alternatives. Right now, each community group tends to feel it is the only one concerned about the future of the community. There has been a breakdown in trust, and many people are reluctant to begin working on relationships with people outside their own narrowly defined communities. A successful community achieves some kind of balance between privacy and stability—closed system—and openness and change—open system.

RN: Given the existence of networks, how can people identify the operative ones in their community?

RLS: Which way do you want? There is the old trick of calling people you know who are concerned, say about education, and asking them who should be working on a task force on education. By the time you have the same name three or four times, you know that person is somehow central, a communications node for education in the community. Or you can do it with paper and pencil—send out a questionnaire: "Who do you think are the key policy makers for _____ in the community?" You make your lists, compare them, and come up with, say five key people.

RN: But you're identifying the people who already have some kind of power.

RLS: Sure, that particular technique identifies the existing networks; it doesn't say anything about the need to enlarge them.

NBC: That's what I'm interested in.

RLS: How do you enlarge and open up your networks? I think there are two starting points. There's the existing network of people: you can discover at what points they are willing to become more open, and where they're not. Or you can go the route of setting up alternative networks. The answer depends on the situation. Personally, if I can work with and enlarge the scope of a group already exercising power in an area, I'll probably choose to do that, rather than setting up a different structure. Setting up a whole alternative structure usually ends up in a win-lose dichotomy, with the two groups struggling over power and seeing themselves as adversaries. It becomes a power model rather than an communication model.

For me it keeps coming back to: first, I can work with the people I can work with; and second, the people I can work with are usually those who are open to working with a wider range of people.

NBC: Can you give us any examples of enlarging an existing network here in Spokane?

RLS: Sure. When Spokane decided to apply for Housing and Community Development funds over a year ago, City Hall made conscious and deliberate decision to try to involve as many people as possible in the development of the application, in the decision as to where the monies should go. This was done partly because of the obvious suspicion of any sort of federal housing program here—Spokane had had bad experiences with previous programs; partly because certain Council members were definitely opposed to the application; and partly because of a growing commitment to citizen participation. Because the city followed a very rigid and carefully planned process,

explicitly accountable to the people, low and moderate income people met in a new way to start thinking about improving their physical environment. A new trust started to grow between City Hall and the people.

In 1975, we kept hearing "Look, they asked us if we wanted an airport; we said 'No.' They asked us if we wanted EXPO; we said 'No.' They built them anyway. What in hell makes you think what we say about spending this money will make any difference?" In fact, one journalist who covered almost all of the meetings during the application development told me: "I know City Hall is going to turn all of this down and when they do, I want to have a documentary ready to expose them." He was rather surprised when the City Council voted approval of the application as developed by the community residents! People in Spokane began to see City Hall as a cooperating agent rather than as an adversary.

RN: Once that happens what can be done to develop more networks, more cooperation?

RLS: I don't know, Roseanne: I sense you're trying to make the word "networks" into a more inclusive or dominating force than I would be willing to. Or else I am not understanding your use of the word. I guess maybe what I'd like to do is throw out the word "network" (sorry about that!). It can be part of a nice intellectual framework for understanding human settlements, but it can also be confusing jargon; I'm not sure that it helps anyone to act, and that's what I'm interested in. The main thing I keep coming back to is: What are the ways within a particular community that one can identify those people who are concerned with similar elements within that community and then begin to work with them to improve those elements? That's always a very particular relationship, a process conditioned by the factors or elements within a particular community; there are no standard answers. But I do think there is a lot of openness now: people feeling "I don't know what's going on around here anymore," that, and that frustration is making them willing to work together in new ways. Now, when

that starts getting down to things that imply radical changes within the community, you might start to see something different.

RN: What about needs in the area of human services?

NBC: I have a basic problem with that term. "Delivery of human services" implies you have a particular quantifiable product—health, or whatever—on a cart, and you bring it to someone's door and they pick it up, and presto—they're healthy. It implies something from me to you, a product, rather than a process of creating a healthy relationship between you and your environment. And of course there are important resources that can be provided—but it's what you then do with those resources that's important.

RN: But the needs are getting greater and the delivery poorer.

NBS: I agree. But I think that's at least partly a result of our approach. Maybe just changing the language—from "human services delivery" to something that implies mutual responsibility and involvement—would help. The solution is something about open networks, accessibility, involvement and redefining quality of life as process and not product.

RLS: Well, you can go back to the liberalism especially prevalent in the early 60's with Kennedy, where the government was seen as the provider of everything. Which is returning with a vengeance in the issue of employment—government playing employer of last resort.

RN: I don't think that's any answer.

RLS: I agree; it doesn't work. You started out with OEO and other federal agencies responding to a specific crisis. The experts who defined the crisis and the needs were well-intentioned folks, but they had the upper hand, the power, and they really felt that they did know what was best for a community. They devised ingenious programs that were inappropriate to the community. Now with less money available, local

governments are trying to meet those needs with no more sense of how to do it than the federal government had.

So the real question is: How do you get the local citizenry to stand up and say, "This is what we need." And then have them feel comfortable working with experts, people with technical expertise, to meet those needs. One of the great uglinesses of citizen participation is we tend to create experts overnight, and sometimes when we manage to disenfranchise a current power, we just replace it with a new, different elite.

NBC: Again, it gets back to working *together*. You work with others, using your particular skills—whether they're in creative brainstorming, design, implementations, whatever—when they're appropriate and standing back when they're not. But that requires a lot of discipline and a lot of trust.

RLS: And a lot of knowledge, self-knowledge and other kinds. I think that some of the work we do at NRF is a case in point. I'm personally more comfortable when somebody comes in to us and says: "We have this need. Can you help us?" Then I can sit down with that person and say, "Hey is that really your need?" We can look at his or her need statement, move it around, and hopefully add some outside perspective. Then I can say: "Okay, if that's your need, these are some things we can do to help you." And it's coming out of a community defined need. That's what I call contract work.

I like that a lot better than grant writing, where we first identify a need and then create a program. Most planning and development is like that: you have an expert run out to identify the need and then create a program to meet the need that s/he has identified. But anything that is done is going to have to come from the community and resonate in the community in order for it to be effective. You can give input to a group, but that group has to understand the input in their own way, and use it in their own way, since they are going to bear the responsibility. When you are at an action point in a community, that group has

to know what it's doing.

It's so hard to see the pivot points, the change points, in a community, except in retrospect. You know that a decision has an impact, for instance, EXPO had a tremendous impact on Spokane, but you don't really know what that impact will be. It's the whole business of "a journey of a thousand miles begins with a single step." It implies encouraging people to work out of the conditions and events *they* can perceive right now, accepting that any action will lead to change.

Basically, it all comes back to the notion that we all work out of self-interest, whether narrowly or broadly defined. And I trust people, generally, who are consciously working out of self-interest more than those who are out to save the community. If I see what I'm doing as primarily to help Joe, rather than as something I'm doing to help me which incidentally helps Joe, then I think there's a problem.

NBC: You'd certainly excuse a lot of behavior in helping Joe that you'd never tolerate in yourself otherwise.

RN: That suggests a lot about humanitarian projects!

RLS: I had one of Spokane's leading liberals come up to me about a year ago and say, "Bob, you know what the problem really is? There just aren't any more good liberal causes anymore." And I said, "Halleluia! You're right; there aren't!"

I think, happily enough, that we're moving out of that whole liberal thing we've been talking about and into some different patterns. In the late 60's, we moved into the self-realization, conscious-raising consciousness-raising trip, with an emphasis on personal, private understanding and growth. Then in the early part of the 70's, there was a lot of groping: a lot of people were running around trying to figure out what they should do with their lives, what

alternatives they had, where they should go with their expanded self-knowledge. But there wasn't much inter-relating; it was still very individualistic.

While that's still going on, I think a number of people have moved through that and are willing to come *together* to begin to *act*. That's what I mean when I talk about a new openness, a new willingness to trust. The challenge now is one of trying to find the ways that the consciousness of the late '60s and early 70's can be translated into cooperative action.

I see our big problem now *not* as apathy, as many others do, but as sheer overload. There's plenty of concern about the culture and about creating a liveable world, but much of that concern is turning into frustration because there's simply too much information. It's just impossible to make sense out of all the data that bombards us. One can turn in any direction—the Club of Rome, Herman Kahn, Charles Reich—and find ultimate disaster or ultimate paradise in the next ten minutes to ten years. And they all have data to back them up! It's impossible! We've evolved a body of knowledge about future trends that's so sophisticated that it's impossible for an individual to know how to relate to it or how to use it. One can find information to back up any conceivable position. And because of this overload, we've gotten into using information as a backup for positions rather than as a resource for action.

NBC: Of course, because there's so much information, that we have to approach it knowing what we want, or it totally overwhelms us. We need to develop handles that will allow us to approach the information more openly.

RLS: Yes, I think if we can develop those handles, and develop the networks of people working in their communities to improve the quality of their lives, we'll find the means to deal with many of our problems and we'll have the ability to respond to our possibilities.

SURVIVAL COMMUNITY

How to evaluate your community's S.Q.*

Does your community have what it takes for a healthy fulfilling life for you and your family? Does it regenerate your bodies, minds, and spirits? Does it draw upon some of your unique capabilities and use them meaningfully for community benefit? Does it allow you to express yourself and participate in community activities in ways which develop the best in you?

This article is concerned with developing human resources within the community. It is centered on the goal of 'healthy fulfilling individuals in a regenerative social and ecological environment'.

Here's a yardstick of key aspects by which to evaluate how your community measures up. If it doesn't and there are other people nearby who share your concern, perhaps you can work together toward such a community as described here. Otherwise, you'd better look around for some area with a 'spirit of community' and make plans to move there: Your life and your children's lives depends on it!

Spirit of Community

1) Do you have a means of becoming aware of yourself as a community...all community members, activities, values, needs, resources, relations between people and events, relationships with the greater environment, a sense of identity, relation to the land, the past, the future, and the present?

2) Do you have a means of understanding this information in a continuing way so that the entire community knows or has access to all that is vital to it? To be complete, this accumulating inventory of knowledge must be open to insights, considerations, and understandings from any individual and group within the community. Do you have access to comprehensively prepared "packets" of information on current, relevant topics and items of your personal or social interest (from "How to plant a garden" to "What a geothermal energy plant is and would mean to your community")? Are the shared understandings of members accessible, coordinated, available from some central area, or are they uncoordinated, random community lectures and meetings; the really good ones you find out about after they've happened?

Enabling community understanding is an opportunity for close meaningful relationship between community learning centers, corporate knowledge resources, public libraries, service organizations, news media, etc., and the community.

* (We need to invent a new term such as 'S.Q.', Self-actualizing Quotient, similar to 'I.Q.', Intelligence Quotient. This would be a number denoting the life enhancing nature of a whole community. The 'S.Q.' would reflect how well the community and its members demonstrate a spirit of togetherness, ability to cope, and life vitality. Everything in this article is related to this idea, but no formula is provided. You have a free hand to work this one out yourself.)

3) Do you have a community decision-making process; a means of cooperatively working together to share individual concerns and interests; uncover values held in common and set mutual community goals? Do you know what your community wishes for its future; what future wish you have for yourself...for the community? Do you know what the community, as a whole, feels is right about the present and what needs changing?

You can't do these things without a 'people-process' for coordinating available knowledge and alternatives to meet the ongoing needs, activities and goals of the community.

4) Do you have a means of implementing these community decisions effectively? Have you chosen your community leaders well, i.e. based on their proven ability to carry out social goals successfully? Do they have integrity and the management abilities for coordinating opportunities and resources to meet community goals? Can they do this in a manner so as to fulfill community members in the process? (Note: these leaders may or may not be holding public office.)

5) Do you have a continuous community feedback system to enable decisions and actions to be evermore appropriate to the existing social reality and in harmony with community aspirations? Do you know what your leaders' true interests, concerns and growth needs are? Do they know what yours are?

In Making The Present Better:

Do you have a method for maintaining awareness of the entire complex of transactions which reflect what is happening in the total community, where it does and doesn't meet its own survival and growth needs, and the patterns of its changes through time (including future projections and alternatives for meeting anticipated needs and opportunities)?

Is this in the form of a dynamic picture of the health of the community as a whole, and is it as available to the community as the morning traffic and weather reports? Could it be, at least in some rough form with most of the major elements considered and portrayed?

In essence, we're talking here about a new science of 'social metabolics' or 'social logistics' which incorporates all the community's material and energy exchanges, major information exchanges, production-consumption cycles, life support systems, regeneration cycles, economic accountings, etc., along with the dynamic psycho-social forces and patterns within the community.

This is indeed a high technology challenge, but a major requirement of the future if we're going to manage the day-to-day community. The community's ability to manage itself in the present depends upon how accurately these 'pictures' build upon and integrate the community's experiences, needs and human resources.

In Making The Future Better:

Do you have a Framework of the Future, i.e., do you have a means for imagining and constructing an integrated framework of community goals?

The community's image of a desired future can serve as a frame of reference for community problem solving and actions in the present. Crises Tactics, solving problems in relation only to other pressing problems, future shock style, result from not viewing the future as a resource and from failing to create the necessary processes of community to bring about a future acceptable to the community. (The future we're talking about here isn't just the one that's twenty years away, it's also the future that begins with dawn each new day.)

A Framework of the Future involves two parts: the emerging science of Futuristics, as it can be applied by your community in determining your values, goals and plans; and secondly, the need for a new concept which will enable you as a community to continually accumulate and accommodate mutual aspirations in a form which draws community members together toward common objectives within an inspiring image of the community's future.

In Community Decision-Making:

Has your community separated the two distinctly different kinds of decisions it must make? (1) What kind of a community you want, and (2) How do you manage your community to cope with today and at the same time set events in motion to bring about your future community? The first one is your responsibility as a community and you can't pass it off on someone else (when you do, it always comes back on you in some 'harder-to-manage' form). The second one is the incredibly difficult task of your chosen governing leaders.* It is their job to determine the right things to do to implement your community's broadscope goals; and to do this by utilizing local human resources - YOU - and all other resources in an effective and fulfilling manner.

Social Imagination:

Is creative thinking sought, encouraged and applied by your community? Do you have a means of stimulating and drawing out the imaginative capabilities of your community members? Healthy imagination enables you to have ample alternatives from which to choose in your community's efforts to become a continuing source of life-giving, growth-enabling and regenerative experiences.

Whether your prospects for the future seem "Grim?" or "Exciting!" depends upon how well you develop this resource within yourselves and your community. (Incidentally, did you know this is one of the few abilities common to genius and that half of the creative geniuses who ever lived are probably alive today?)

Perhaps the Science/Art of Creative Imagination could be developed and applied by your community.

* ("Govern...keeping in a straight course or smooth operation for the good of the individual and the whole", Webster's New Collegiate Dictionary, Copyright 1960.)

Strategies, Tools and Techniques:

Does your community have an easy-to-use inventory of useful strategies, tools and techniques covering the entire spectrum of human endeavors? And is this readily available to individuals and groups in the community for assistance in handling daily problems and needs? Can you add to it in an effectively simple manner so others can benefit from your knowledge and you from theirs? If such a service is needed, who in your community could best provide it? How could it pay for itself?

On Human Individuals As Wealth:

Do you consider healthy, fulfilling individuals as the PRIME GOAL AND RESOURCE of the community? Do you realize that without them the community has no unifying spirit; cannot implement its other key aspects; nor hope to cope with its social and environmental needs?

First are survival needs: Is your community aware of its members who feel they don't have much chance of satisfying their own or their families' physical survival needs, who don't feel any kind of economic security, NOT TODAY, NOR IN ANY TOMORROW THEY IMAGINE, who don't know how to manage themselves as a resource for any self-respecting jobs, whose education didn't start, or more correctly, started in the streets with their 'instructors in life' being people who were frustrated, bitter, undeveloped, perhaps mentally and psychologically damaged?

Then, there's the feeling of self-worth. How many people feel they are doing little or nothing which contributes to the community, who think they have little meaning to anybody, much less themselves; who perhaps have concern and a desire to do something meaningful for themselves and others but don't know where or how to begin, who may even have tried and been rejected and reduced even more into feelings of futility?

Depressing? These are the facts; this is part of the human community you have to work with, isn't it? But this isn't the whole picture. Remember, we're talking about developing human resources within community; our goal is healthy, fulfilling individuals in a regenerative social and ecological environment.

Every community also contains individuals who have already satisfied some or all of the requirements just stated, and are actively involved in seeking wholeness; discovering/developing/expressing/working with their unique innate capabilities; motivated by growth needs; have aspects of their lives worked out and are in the process of integrating more of their total selves in relation to their environment, their fellow humans, God, and their future.

Healthy persons experience a continuous unfolding of personal potentials and enrich those whose lives they touch. DO YOU?

Four key human resources can be drawn upon from within your community: 1) Community members who already live in a regenerative manner and continuously demonstrate this capacity of the human spirit, and those who are beginning to experience life in this way; 2) Those who understand the science and art of assisting people in living more complete, fulfilling lives (facilitators, enablers, etc.,). Teilhard de Chardin describes these people as 'technicians of the human spirit'; 3) People whose life style continually keeps them informed on who is demonstrating capabilities,

dedication and love in the community. People who recognize vital community needs as well as human resources; 4) ALL community members contributing something essential to the community. Today's living communities are firmly founded upon these people and their daily work. (However, sometimes people contribute an essential only by being destructive and damaging to others. These people are "Telling Us" by their actions that they are unable to solve their material wants or needs in a constructive way. This seems a form of 'poverty' which is not limited to those without money or materials. As a community we need to handle these events as we feel appropriate: First for the safety and health of the entire community; Secondly for as much benefit to that individual as we are able (within the conditions of our first decision); Thirdly, and perhaps most important yet most often overlooked, we need to delve into the essence of that aspect of the community's inner workings so such destructive/damaging acts are eliminated in the future, and people in such situations can find constructive and healthy means for solving their material and spiritual needs).

On Taking The Social Initiative:

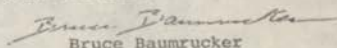
Be there now! The limits of your community are not being imposed from without, but from within! Everything needed for realizing your potential as a community and as an individual is available today. You have all the knowledge and skills, the technology and natural resources needed; they're all standing-by waiting to be put to more fulfilling use BY YOU, AS A COMMUNITY: as "a group of people sharing a common concern and doing something about it" (M.Mead).

A great many people within your community stand ready with a multitude of abilities, ready to act when they see meaningful ways to make a difference. "Ordinary" community members are already active within local groups, operating outside their vocational fields, and demonstrating surprising competence in their contributions.

The scope and depth of interests and talents within your community are beyond individual imagination, and represent part of your community's real wealth. You have an opportunity to tap this human reserve to help yourself and others find more meaning in life, solve problems, share visions of what can be, and along with asking "Why not?" you can work together as a community toward achieving something great.

Or you can wait until community process breaks down, crime increases even more, you and/or your children withdraw into other realities either mentally, emotionally or physically (through socially accepted escapes, chemicals, sickness, suicide, etc.,) Or some other crises hits - and like dazed fighters you and your neighbors stagger around in future shock, incapable of providing any kind of desirable future for yourself or your loved ones.

There are precedents for such social initiative (this country is founded on one), however, that you or any group of you will take up this challenge seriously and act effectively is a long shot. The question is, are you going to make any significant contribution to the heritage of your children's children's children? You can, You know.


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PAPER

ON THE QUALITY OF LIFE

by

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ON THE QUALITY OF LIFE

by

B. Bruce-Briggs

I will speak informally from the following briefing notes which offer a quick overview of my understanding of the subject. I invite members of the panel to ask me to expand on any topics they consider of particular interest.

Table 1 introduces the notion of "Quality of Life." It suggests that the concept consists of a syndrome or bundle of values, attitudes, and beliefs, with a long pedigree, and that "quality of life," like so many other value systems in America, is concentrated among definable groups.

Table 2 briefly outlines the historical background of quality of life. The most important manifestation was the reaction against industrialization of the early nineteenth century aristocrats and intellectuals and their turn to "nature" and pre-modern eras as preferred models for human life.

On Table 3, the notion of quality of life is illustrated by contrasting some of its slogans and tenets with those of the value system "standard of living" which it criticizes and seeks to supplant. Differing attitudes toward economic growth are displayed in Table 4.

On Table 5 is displayed the occupational base of quality of life. This, of course, is the "new class" described by many contemporary political analysts. However, quality of life agitation is also closely correlated with ethnicity. The groups on Table 6 are more likely to support these views than the public as a whole.

And, of course, "quality of life" is supported by those on Table 7 with definite a definite interest in its furtherance.

Conversely, quality of life is not promoted or felt as strongly among many large groups in our society, some of whom are listed on Table 8.

On the whole, the opponents of quality of life are less prosperous and more striving than its proponents. This point is supported by the reported membership of a very active quality of life organization, on Table 9.

It is certainly reasonable to expect the prosperous to be opposed to further economic progress and the substitution of more quality for less quantity of life. As suggested on Table 10, the past half century of growth of "quantity" has seriously eroded the quality of life of the upper middle classes of industrial society (defined as the 10 percent of the population with 2-10 times the median family income).

However, it would be a crude error to merely see the quality of life issue as one of "class war." There are substantial differences in style within the privileged classes as well, as indicated on Table 11. Note that quality of life types are identified with those who wish to avoid (but not eschew) technology and avoid vulgar display. There is a similar and somewhat parallel distinction between standard of living and quality of life attitudes toward conservation and environmentalism, as suggested on Table 12.

It would also be appropriate to point to many of the legitimate concerns of many quality of life advocates. Table 13, drawn from Kahn and Bruce-Briggs' Things to Come (Macmillan, 1972), points to some

legitimate costs and fears from further economic and technological growth.

I believe Table 14 is the most important part of this briefing. Note that many of these priorities of the average American are quite irrelevant to the concerns of quality of life advocates, and most are predicated on a high and growing standard of living. Consistent application of a quality of life thrust could seriously and adversely impact on the quality of life in America.

① "QUALITY OF LIFE"

A recent phrase

Reflects expansion and popularization of "romantic"
world view

Reflection of individual values

Highly correlated with
occupation
education
class
ethnicity

② PRECURSORS TO QUALITY OF LIFE

Enlightenment sensibility

Romantic reaction to industrialization

Progressive conservationist attack on predatory
robber barons

Bohemian reaction to Phillistines

Intellectuals' reaction to Babbitry

③ "STANDARD OF LIVING"

Progress
 The more, the better
 Big is better
 Gross national product
 Affluent society
 Life is tough and hard

 Conquer nature
 Further economic growth
 is beneficial to mankind
 Economic growth to reduce
 poverty
 Embrace technology
 Economic efficiency is
 extremely important

"QUALITY OF LIFE"

Balance
 Less is more
 Small is beautiful
 Gross national pollution
 Effluent society
 Nature is harmonious and
 delicate
 Participate in nature
 Further economic growth
 will be disastrous
 Reduce poverty through
 income redistribution
 Reject (most) technology
 Economic efficiency is
 a specious measure of
 human welfare

④ STANDARD OF LIVING

All human activities pollute
 Pollution is undesirable,
 but inevitable
 Make balance between production
 and pollution
 Reduce pollution through
 technology
 Control pollution through
 tax incentives

QUALITY OF LIFE

All human activities pollute
 Pollution is intolerable
 Sacrifice production for
 pollution
 Reduce pollution by cutting
 consumption
 Control pollution by legal
 sanctions

⑤ OCCUPATIONAL SUPPORTERS OF QUALITY OF LIFE

Academics (especially, but not exclusively, the humanities and social sciences, and very rarely engineers and geologists.

Teachers, especially non-scientists.

Social welfare bureaucrats

Professionals (especially salaried)

Media

Advertising

Foundations

Research organizations

Many corporate planners and PR types

Political staffs

⑥ "ETHNIC" SUPPORTERS OF QUALITY OF LIFE

Old Yankee elites, especially the declining rich

"Mainstream" Protestant denominations

Congregationalists

Episcopalians

Presbyterians

Quakers

Unitarians

Northern Methodists

Jews, especially Reformed and secularized

⑦ INTEREST SUPPORTERS OF QUALITY OF LIFE

Purveyors of environmental equipment

Planners

Socialists

Purveyors of government studies

Politicians sensitive to quality of life contingencies

8 OPPONENTS OF QUALITY OF LIFE

Southerners
Blacks
Blue collar workers
White ethnics
Trade unions
Nouveau riche
Businessmen

9 OCCUPATIONS OF SIERRA CLUB

Managers and Executives	17%
Lawyers, Doctors, Dentists	12
College teachers	9
Other teachers	9
Engineers	7
Other professionals	11
Technicians	7
Students	6
Clerical and blue collar workers	9
Other	13

Sierra Club Bulletin, July/August '72

10 A PARADIGM OF UPPER MIDDLE CLASS LIFESTYLES

<u>\$300/Capita</u>	<u>\$1,000/Capita</u>	<u>\$3,000+/Capita</u>
Modest Status	High Status	No special status
1 or 2 servants	2-5 servants	1 or no servants
Crude servants	Skilled servants	Insolent servants
Expensive goods	Cheap goods	Shoddy goods
Few services	Many services	Service "rip-offs"
No cars, little or no commuting	Cars, open roads, easy parking	Long distance commuting, traffic jams
Urban neighborhoods	Suburbs	Suburban sprawl
Unnoticed pollution	Less pollutions	Pollution sensitivity
Limited travel	Tourism	Tourist pollution
"Protestant ethic"	Cheerful materialism	Guilt
Maintaining "station"	"Progress"	"Quality of life"
Skepticism about change	Optimism about growth	Hostility to growth

⑪ DIFFERING UPPER CLASS LIFESTYLES

STANDARD OF LIVING

Hunting and fishing
 Campers
 Domestic cars
 Big cars
 Big single-family houses
 Flashy jewelry
 Furs
 Spectator sports
 Golf
 Power boats
 Flying
 Motorcycling
 Contemporary architecture
 Traditionalist architecture
 Carpentry
 Marching bands
 Fraternal societies
 National Guard
 Color T.v.
 Tennis
 Skiing

QUALITY OF LIFE

Bird-watching and camera hunting
 Back packing
 Foreign cars
 Small cars
 Town house and country home
 Artistic jewelry
 Leather
 Cultural events
 Jogging
 Sail boats
 Gliding
 Bicycling
 Avant garde architecture
 Genuine farm houses, etc.
 Handicrafts
 Chamber ensembles
 Discussion groups
 Reform politics
 Stereo
 Tennis
 Skiing

(12)

CONSERVATION

VS.

ENVIRONMENTALISM

Conserve nature for man's use

Preserve nature from humanity's
despoliationRational exploitation of
natural resources

Hoard non-renewable resources

Wildlife management

Wildlife preservation

(13)

SOME MIXED BLESSINGS OF PROGRESS

1. Defunctionalization--partial (but increasing) loss of meaning of many traditional activities through the development of shortcuts to gratification: erosion of "traditional societal levers"
2. Accumulation, augmentation, and proliferation of weapons of mass destruction
3. Loss of privacy and solitude
4. Increase of governmental and/or private power over individuals
5. Loss of human scale and perspective
6. Dehumanization of social life or even of the psychobiological self
7. Growth of dangerously vulnerable, deceptive, or degradable centralization of administrative or technological systems
8. Creation of other new capabilities so inherently dangerous as seriously to risk disastrous abuse
9. Acceleration of changes that are too rapid or cataclysmic to permit successful adjustment
10. Posing of choices that are too large, complex, important, uncertain, or comprehensive to be safely left to fallible humans

⑭ QUALITY OF LIFE OF THE AVERAGE NON-PRIVILEGED AMERICAN

Successful interpersonal relations
Good health
Pride in his nation
National security
Personal security
Moral environment
Employment security
Maintaining established standard of living
and lifestyle
Potential upward economic mobility
Education appropriate to achieve the above
Suburban environment
Personal mobility
Recreational opportunities

Now let me respond to the following questions addressed to me in an attachment to Senator Culver's letter of 26 May last:

1. If present trends remain unchanged, what do you think the quality of life will be in the year 2000?

As suggested above, what is the quality of life will depend very largely upon who you are. If present trends remain unchanged, the quality of life will be less favorable for the privileged orders of the United States and the Western world in general. The prosperous will find it increasingly difficult to obtain personal servants and luxury services. There will be a general leveling of the quality of income and quality of goods available. The resorts and other playgrounds of the prosperous will be even more overrun by the newly prosperous lower orders. Not only will upper and upper middle class Americans be obliged to share national parks, beaches, and cultural facilities with newly rich Americans, but with many millions of nouveaux from foreign countries as well, such as Mexico, Brazil, Korea, and many others.

Conversely, for the great bulk of humanity the quality of life will be superior. People will have better health and longer life, much more individual liberty, and enjoy more trivial luxuries that we rich take for granted.

2. Is our present rate of economic growth advantageous?

No, if it were more rapid, we could better provide for our national security, for increased social programs, for the elimination of poverty, for aid to developing nations, and for investment in systems to reduce pollution and other environmental damage.

3. Is there a tradeoff between quality of life and quantity of goods?

There are numerous and innumerable tradeoffs between different human desires for quality and quantity in all aspects of life. However, one can make a general statement to the effect that as society becomes more prosperous, men become more expensive and goods more cheap. A modern industrial economy places relatively little value on goods so we have, for example, a tendency to make things and throw them away and not to repair old ones. The most outstanding examples of this are housing and automobiles, but it is true in most areas of activity. Such a system seems to be the inevitable result of a prosperous society. Judging from past examples, goods could be made more expensive and labor more cheap and better services provided for the prosperous by driving down the wages and standard of living, and presumably the quality of life of working men and farmers.

What is the effect of this relationship on the environment?

The relationship just described requires the supply of increasing amounts of energy, raw materials, and manufactured products, all of which are produced by processes which affect the environment, in a few cases in a significantly negative way. However, the relationship also produces the means to control these negative changes, and much more importantly, has practically eliminated the most obnoxious and lethal forms of environmental degradation--especially the endemic diseases which have literally plagued humanity from its beginning. For example, the most effective environmental control measure in history has been to mechanically separate water supplies from human excrement, historically the vehicle of death of the majority of human beings.

4. What environmental changes may occur in the next 50 years which will adversely affect the quality of life?

Table 15, also taken from Things to Come lists some possibilities for, to say the least, extreme degradation of the environment. Most of these are extremely unlikely, but could be so hazardous as to more than justify the need to be monitored very carefully and, if necessary, steps taken to abort potential dangers and disasters.

Of these, the most threatening is the adverse environmental effects of the use of nuclear and thermonuclear weapons in warfare. During the next 10 to 20 years it is highly likely that an additional 20 to 30 countries will obtain nuclear weapons and a few of them will have the capability of launching sneak attacks upon the United States and certainly upon each other.

5. What are the most significant actions that the federal government should take to improve the future quality of life? What would be the primary effect of these actions?

While it is not my place to specify what actions the federal government should take, I do think it appropriate to point out that most activities of the national government intended to improve the "quality of life" of the bulk of Americans have very little to do with the "quality of life" as understood here, or even the environment. Were I to make a priority list it would include the following:

- A. Prepare better defenses against nuclear attack.

- B. Better defend the citizenry against crime. It is a substantial part of the deterioration of the quality of life that Americans are afraid on the streets and even in their homes.

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Gradual and/or National Contamination or Degradation of the Environment

1. Radioactive debris from various peaceful nuclear uses
2. Possible greenhouse or other effects from increased CO₂ in the atmosphere
3. Waste heat
4. Other special wastes
5. Other wastes, debris, and just plain garbage
6. Noise, ugliness, etc., associated with many modern activities
7. Excessive urbanization
8. Excessive overconsumption
9. Excessive hunting
10. Insecticides, fertilizers, growth "chemicals," food additives, etc.

Spectacular and/or Multinational Contamination or Degradation of the Environment

1. Nuclear war
2. Nuclear testing
3. Bacteriological and chemical war or accident
4. Artificial moons
5. Projects West Ford, Storm Fry, etc.
6. Supersonic transportation (shock waves)
7. Weather control
8. Big "geomorphological" projects
9. Million-ton tankers (Torrey Canyon was only 111,845 tons) and million-pound planes
10. Other enterprise or mechanism of "excessive" size

Intrinsically Dangerous Technology

1. Modern means of mass destruction
2. Nuclear reactors—fusion or fission
3. Nuclear explosives, high-speed gas centrifuges, etc.
4. Research submersibles, satellite launchers, commercial aircraft, etc.
5. Biological and chemical "progress"
6. Molecular biology and genetics
7. "Mind control"
8. New techniques for insurgency, criminality, or ordinary violence
9. New techniques for counter-insurgency or imposition of order
10. New "screenplay" and synergisms

Dangerous Personal Choices

1. Sex determination
2. Other genetic engineering
3. Psychedelic and mood-affecting drugs
4. Electronic stimulation of pleasure centers
5. Other methods of sexual satisfaction
6. Excessive permissiveness and indulgence
7. Dropping out and other alienation
8. Excessive narcissism or other self-regard
9. Super-consumption
10. Lengthy liberation

Dangerous Internal Political Issues

1. Computerized records
2. Other computerized surveillance
3. Other advanced techniques for surveillance
4. Excessively degenerate (or unduly reasoning) centralized capabilities
5. Improved knowledge of and techniques for agit-prop and other means of creating disturbances
6. Improved knowledge of and techniques for preventing disturbances
7. Complex or critical governmental issues leading to either "technocracy" or "Cacodemon"
8. Nuclear weapons affecting internal politics
9. Excessively ill-informed attitudes
10. Other dangerous attitudes

Upsetting International Consequences

1. Both new and "traditional" demonstration effects
2. Technological obsolescence of "modified" labor
3. New synthetic—e.g., coffee, oil, etc.
4. Forced modernization
5. Growing gulf: feelings by many in wealthy nations—particularly among the alienated or young
6. Inexpensive and widely available "realistic" communications and physical travel
7. Accelerated "brain drain"
8. Cheap (synthetic?) food
9. Cheap education
10. Control and exploitation of the oceans, space, moon, and even the planets

Some Conceivable Weapons Possibilities

1. New kinds of nuclear weapons
2. Various kinds of laser and other "death rays"
3. A menu of chemical and/or biological weapons
4. New kinds of ballistic missile defense particularly effective against relatively small offense forces or against forces which use unsophisticated technology and/or tactics
5. Similar developments for air defense against airborne threats
6. Well-understood doomsday machines (or near-doomsday machines)
7. Tsunami (tidal wave) producers
8. Climate changes, earth scorches, or other ways to modify or damage the environment on a large scale
9. Psychological, or even direct mental warfare
10. "Nuclear six-gun" technology—cheap and widely available nuclear weapons of mass destruction
11. Others even "better"

Bizarre Issues

1. Generational changes, e.g., extended longevity
2. Mechanically dependent humans, e.g., pacemakers, diabetes
3. Life and death for the individual, e.g., artificial kidneys, etc.
4. New forms of humanity, e.g., "hive" computers
5. "Flexible" birth control for "impossible" groups or nations
6. Other external controls or influence on what should be a personal or even institutionally private choice
7. Life and death or other control of "outlaw" societies which, however, have not yet committed any traditional crime
8. Even the continuation of the nation-state system
9. Controlling and limiting change and innovation
10. Radical ecological changes on a planetary scale
11. Interplanetary contamination

C. Continue the excellent programs of the last two generations intended to ease the route of most Americans in upgrading the quality of their life by moving to suburban or even lower density communities and neighborhoods. At the present time "quality of life" and environmentalist arguments are being speciously used by established self-interested groups to block more people from enjoying the benefits of suburban and exurban life.

D. Continue the existing excellent federal programs intended to ease Americans in maximizing their mobility. In particular, continue something like the highway trust fund to build highways both to assist suburbanization and for the general freedom of movement for most Americans. Needless to say, attempts by self-interested and selfish groups to drive the bulk of the citizenry off the roads should be resisted.

E. Take coherent, systematic steps to bring in safe, politically reliable and environmentally sound energy sources. There are more than enough on this continent to provide us with adequate fuel for the next several hundred years at the very least. In particular, take whatever steps are needed to get us over the hump of the next 20 or 30 years, after which practically limitless fusion, solar, and geothermal, and perhaps now unthought-of sources of energy will be available.

F. Systematically review all existing environmental standards, many of which would now appear to be unnecessarily limiting the liberty of individual Americans and cutting into their standard of living and quality of life. In particular, Congress should be most cautious about giving discretionary power to regulatory officials who seem in many cases to reflect the views of a narrow class to the detriment of the quality of life of the bulk of Americans.

B. BRUCE-BRIGGS
Resident Consultant

Barry Bruce-Briggs is a historian, urbanologist, and policy analyst concentrating on the long-term implications of present policy choices.

In 1975 Bruce-Briggs was Research Director of the Smith Richardson Foundation, responsible for the development of program areas and the selection and evaluation of individual projects in policy research and economic education. In 1974 he was Coordinator of Growth and Resources Studies for the (Rockefeller) Commission on Critical Choices for Americans.

From 1969 to 1974 Bruce-Briggs was on the Professional Staff of the Hudson Institute. Among his projects were policy and future studies for the Department of Defense, the U.S. Army, the U.S. Navy, NASA, the U.S. Park Service, the Coca-Cola Company, the Kettering Foundation, and other clients. He also contributed to drug control and gambling policy studies for New York State, participated in economic development studies in Algeria, Sweden and Korea, and had a major role in the Hudson study of the Future of the Corporation. He was an Employee Member of the Institute and served on its Research Management Council.

After his formal education (Union College--B.A. Industrial Administration; Temple University--M.A. European History) and military service, Bruce-Briggs was a city planning consultant in Philadelphia, and continued his activity in urban affairs as consultant to an "Operation Breakthrough" consortium, to the Office of the Canadian Minister for Urban Affairs, to the Central Mortgage and Housing Corporation of the Canadian government, and to the Temporary New York State (Scott) Commission Investigating New York City, as well as heading Hudson Institute studies of urban futures and policy for HUD and of low income housing for OEO.

Bruce-Briggs has also been a consultant to the Ford Motor Company and the Canadian Ministry of Science and Technology and is currently serving on the Economic Research Review Committee of the Economic Development Administration.

Bruce-Briggs is author of Cities on the Way Out (forthcoming in 1976) and co-author (with Herman Kahn) of Things to Come (1972). He has contributed to the anthologies Ecology and the Quality of Life (1973), Crisis in Urban Housing (1974), and No Land is an Island (1975). He is a regular contributor to Public Interest and Commentary and has written for Military Affairs, New York Times and other periodicals. He lectures widely on urban affairs and future studies, and has given papers, speeches, and briefings for Smithsonian Institution, Australian Broadcasting Commission, CIA, IBM, Ford Motor Co., World Future Society, Council of State Governments, Military Operations Research Society, and many other government, business, and academic audiences. He has also been a Visiting Lecturer at the New School for Social Research.

Senator CULVER. We want to thank you very much for coming. Your testimony has been extremely helpful as we proceed in this series, and I want to thank both of you very much for your cooperation.

The panel stands adjourned until the call of the Chair.

[Whereupon, at 12:30 p.m., the committee was adjourned, to reconvene subject to the call of the Chair.]



