

DOCUMENT RESUME

ED 080 412

SO 006 005

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 TITLE The Educational Significance of the Future. A Report Prepared for Sidney P. Marland, Jr., U.S. Commissioner of Education.
 SPONS AGENCY Office of Program Planning and Evaluation (DHEW/OE, Washington, D.C..
 PUB DATE Aug 72
 CONTRACT OEC-0-72-0354
 NOTE 148p.
 EDRS PRICE MF-\$0.65 HC-\$6.58
 DESCRIPTORS Bibliographic Citations; Educational Change; *Educational Objectives; *Educational Planning; Educational Problems; *Educational Research; Educational Trends; *Futures (of Society); Research and Development Centers; Research Opportunities; Research Projects; Social Problems; Surveys; Technical Reports
 IDENTIFIERS *Futures Research

ABSTRACT

This is the final report of a USOE study to determine the educational significance of the future. Chapter I summarizes the study and makes recommendations. Chapter II is designed to provide an "action picture" of futures planning insofar as, it could be caught in motion during 1971-1972. Chapter III discusses policy research with a bearing on education. Its content is drawn from the survey interview form used in the study, as well as from printed materials. "The Educational Significance of the Future" is explored in Chapter IV. This part of the report is composed of the opinions which a majority of futurists seem to share in regard to the tasks and problems of United States schools as well as much education related information abstracted from the survey questionnaire. The chapter concludes with a review of possible changes in U.S. educational policies, structures, and organization. Chapter V endeavors to examine the question of whether, and if so, how, the USOE can make better use of the Educational Policy Research Centers at the Stanford and Syracuse research institutes. A short bibliography listing books and articles germane to the study concludes the report. (Author/SHM)

ERRATA

Inevitably, typographical errors invade a manuscript which is professionally edited. Errors found in a first reading of this report should be corrected to read as follows:

Page	line	Error
viii	18-19	Stan <u>ford</u> and Syracuse <u>Research</u> <u>Institutes</u>
9	22	<u>Glaubwürdigkeit</u> (underscore)
13	12	bright <u>en</u> ing
14		(Rate since 1870) add word "rate"
19	2 up	tactics. <u>Also</u> , more (add word)
20	6 up	yesterday's (apostrophe)
23	3	Sawyer's (apostrophe)
34	10	level <u>l</u>
57	5 up	<u>Institute</u> <u>for</u> <u>the</u> <u>Future</u> (double underscore)
95	6	"of" should be "or"
108		page isn't numbered
133	8	P <u>an</u> ther

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THE EDUCATIONAL SIGNIFICANCE OF THE FUTURE

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A report prepared for
Sidney P. Marland, Jr.,
U.S. Commissioner of Education

Contract No. OEC-0-72-0354

August, 1972

Prepared by:

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LETTER OF TRANSMITTAL

TO: Sidney P. Marland, Jr.
U. S. Commissioner of Education

FROM: Harold G. Shane
University Professor of Education
Indiana University

VIA: Bert Mogin
Acting Director, Planning Division
Office of Program Planning and Evaluation

RE: Final Report on Contract No. OEC-0-72-0354
THE EDUCATIONAL SIGNIFICANCE OF THE FUTURE AND ITS
IMPLICATIONS FOR USOE POLICY DECISIONS

It is with pleasant professional memories and appreciation that I send you herewith the attached report. The document describes in considerable detail the status and activities of various policies research centers which were visited by the writer during the autumn and early winter of 1971-1972.

I respectfully suggest that you first examine the Table of Contents to select points of especial interest as distinct from pages of supportive data which have a touch of tedium despite the need to include them. The first chapter, SUMMARY AND RECOMMENDATIONS: A PRECIS FOR THE U.S. COMMISSIONER OF EDUCATION, is a concise abridgement that deals with the questions regarding futures research which were raised in the letter, written on your behalf by Don Davies, in which I was invited to undertake the present study.


Harold G. Shane

HGS:jw

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FOREWORD

Introduction: Purpose of the Study. In September of 1971, the USOE funded a special 120-day study of the educational significance of the future. It was the purpose of this inquiry to answer three questions raised by the U.S. Commissioner:

- (1) What is the state of the art of futures planning and futures studies in policy research centers and to what extent is the work underway of relevance to U.S. public education?
 - (a) What is known about futures planning as it applies to education?
 - (b) What futures research and study has been done by whom and with what results?
 - (c) What techniques and methods have been developed with a bearing on educational futures planning?
- (2) How can the educational community, particularly the Office of Education, best make use of policy and futures research?
- (3) How can the Office of Education use, to better advantage, two Policy Research Centers at the Standord and Syracuse research institutes?

Work was authorized by Contract No. OEC-0-72-0354. Bert Mogin, Acting Director, Planning Division, Office of Program Planning and Evaluation was Project Officer. Field visits for the most part were made during the first 90 days of the study.

Procedures. The procedures followed were simple. The writer prepared a list of 20 questions, the format for which was an open-ended interview form. The queries were selected on an empirical basis and designed to obtain data enchorial to each agency or intellectual community visited. The questions were as follows:

- (1) What are the general major purposes of your Center?
- (2) What are your most important past ventures?
- (3) What are your major or most interesting current and forthcoming projects?
- (4) Which of your publications are related to future-planning in education or to the significance of the future for education?
- (5) How do you distinguish between conventional planning and future(s)-planning?
- (6) What is your interpretation of the place of (1) broadly based participation in future(s)-planning, and (2) the role of planners who have expertise and specialized knowledge?
- (7) What value bases and/or goal-images, if any, are needed in future(s)-planning?
- (8) How would you define, describe, or characterize your goal-image?
- (9) What has been disseminated, demonstrated, or implemented as a result of your "futures" activities? How is this being done?
- (10) How would you characterize and describe the interaction level existing between your center and other centers?
- (11) As a result of your "futures" work, what do you identify as short-range (to 1975) and long-range (to 1980) emergent trends or problems? In society as a whole? In U. S. education?
- (12) What educational problems or issues do you consider to be: Predictable? Projectable? Responsive to future-planning?
- (13) What opinions, projections, data, etc., do you have with a bearing on education in re possible: Technofutures? Sociofutures? Biofutures? Psyche (or human) futures?
- (14) What potential "situation breaks" can you identify which may modify or reverse assumptions about the future? (e.g., the development of "dynamic contraction" policies in business,
- (15) What bearing may rapid change have on future(s)-planning? (e.g., may we need to concentrate more heavily on short-term planning because of the speed with which problems appear in new forms and guises?)

- (16) What general "futures" activity, including research, would you propose for the USOE?
- (17) With regard to "futures" activities and policies, are there ways in which the USOE could make specific use of your advice, services, or resources?
- (18) If funding, time, and personnel were no problem, in what "futures" study and/or future-planning venture might you wish to invest your energy?
- (19) What relation, if any, do you see between future-planning and the "self-fulfilling prophecy" concept?
- (20) What item(s) might have been added to those listed above to increase the value of this survey instrument to the Commissioner of Education?

Both the explicit answers to question 20 and the data gathered suggest that the survey instrument was a valid one.

Limitations of the study. Perhaps the major limitation of the study was the lack of time to visit and to confer with certain distinguished policy and futures research workers and other knowledgeable persons who could have provided additional valuable input. A second limitation was not fully appreciated until after the present inquiry was begun. The complexity of contemporary society has created many cross-agency and interdisciplinary relationships. Industry, the military, the U.S. business establishment, labor, social, and so on--all are directly or indirectly involved in futures planning and policy research with direct or indirect bearings on education. This intricate mass of social ganglia--these energy centers and the impulses they transmit--are extremely difficult to assay without resources greater than those committed to the present inquiry.

Overview of the report. Chapter I summarizes the study and makes recommendations. Chapter II which follows is designed to

provide an "action picture" of futures planning in as it could be caught in motion during 1971-1972. Chapter III discusses policy research with a bearing on education. Its content is drawn from the survey interview form, as well as from printed materials generously supplied by the centers and persons visited.

"The Educational Significance of the Future" is explored in Chapter IV. This part of the report is compounded of the opinions which a substantial majority of futurists seem to share in regard to the tasks and problems of U.S. schools as well as much education-related information abstracted from the survey questionnaire. The chapter concludes with a review of possible changes in U.S. educational policies, structures, and organization--as suggested by behavioral scientists, logicians, mathematicians, lawyers, and other specialists in policy research as distinct from professional educators in elementary, secondary, and higher education.

As requested by the Commissioner, Chapter V endeavors to examine the question of whether, and if so, how, the USOE better can make use of the Educational Policy Research Centers which it supports in the Research Institute structures adjacent to Syracuse and Stanford Universities.

A copy of the survey instrument is not included as an appendix because it is presented in Chapter III. A short bibliography listing books and articles germane to the study concludes the report. The titles were selected for the reference of persons who are not familiar with the frontiers of futures research but who are interested in knowing more about it.

THE EDUCATIONAL SIGNIFICANCE OF THE FUTURE

I. SUMMARY AND RECOMMENDATIONS: A PRÉCIS FOR THE U.S. COMMISSIONER OF EDUCATION

Introduction. The précis which follows deals with policy research and futures studies with a bearing on education in the United States. It reviews the status of futures research in 1971-1972 and suggests its significance. It also presents educational tactics, strategies and focal points which may be of use to USOE and introduces specific proposals for service, research, and development that the USOE or NIE may wish to encourage between 1973 and 1985.

The summary that follows is based on data that were collected during interviews with more than 80 persons in 22 centers or agencies engaged in futures research. These interviews are reported in greater detail in the Chapters II through V which follow.¹

WHAT IS FUTURES RESEARCH?

Since the sharply milled edges of freshly minted words are quickly dulled by circulation and misuse, it makes sense to begin this summary with a definition of the relatively little-known term "futures research." It is a new discipline concerned with sharpening the data and improving the processes on the basis of which policy decisions are made in various fields of human endeavor such as business, government, or education. The purpose of the discipline is to help policy makers choose wisely--in terms

¹The writer accepts full responsibility for statements in the report, and the recommendations made should not be construed to reflect the views of any specific survey participant except when they are explicitly quoted in the text.

of their purposes and values--among alternative courses of action that are open to leadership.

In the process of reaching educational decisions, futures research is not merely limited to providing reasoned and documented advice; it is intended to sensitize the policy maker himself to possible alternative futures; to the probable consequences of a given course of action. In other words, futures research focuses on educating the policy-makers with respect to desirable processes as well as on helping them to reach the goals they wish to reach or to attain the products they hope to develop.

THE STATE OF THE ART OF FUTURES RESEARCH

Who is engaged in futures studies and policies research?

A wide variety of persons and agencies are involved in policy decision research based on futures studies. These researchers range from large and relatively long-established companies such as RAND Corporation to individuals working with grants or on their own initiative. Representative of such scholars are John R. Platt of the Mental Health Research Institute and Donald N. Michael of the Institute for Social Research, both at the University of Michigan, Ann Arbor.

Nonprofit organizations such as the Institute for the Future (Middletown, Connecticut, and Menlo Park, California) are to be found serving governmental and business agencies as are profit-making consulting organizations like The Futures Group of Glastonbury, Connecticut and The Hudson Institute directed by Herman Kahn and performing "policy research in the public interest."

Highly important in educational futures studies are the Educational Policy Research Centers funded by the USOE. (See Chapter V).

Private and public commissions such as The Carnegie Commission and the President's Commission on School Finance have considered the implications of the future as have conventional survey groups like the Academy for Educational Development in New York City headed by Alvin Eurich. Modest ventures in higher education, supported more by enthusiasm than by extensive funding, were also active during 1971-72; for example, the "Program for the Study of the Future in Education" at the University of Massachusetts and "The Futuristics Curriculum Project" at Alice Lloyd College, Pippa Passes, Kentucky. Another cluster of futures-oriented groups were persons and institutions with USOE contracts to which professional futurists were attached, among them The Study Commission on Undergraduate Education and the Education of Teachers at the University of Nebraska, Lincoln, for which Paul Olson was Director.

Any roster of agencies engaged in policies research that is directly involved in influencing the future of education would include business group pioneering in the realm of educational practices. An example would be the Education Group of the Singer Corporation which is carefully studying the future in relation to the market for educational material and services. Among their ventures are more than 20 Singer Learning Centers operated for three- to eight-year-old children and which have been opened since 1971.

Finally, there are hard-to-classify persons or groups associated with futurism. Among these are author-editors such as

Edward Cornish, publisher and editor of THE FUTURIST, and Guy F. Streatfeild, editor of the British magazine FUTURES. A final example is the "Teilhard Center for the Future of Man." Located in London, the Center seeks to disseminate the views of the late Father Teilhard de Chardin and, in the process, seeks to increase understanding and improve future relationships among the Old World, the New World, and the Third World.

Techniques and resources used in futures research. The various tools used by futurists range from machines such as the computer to mathematical procedures with imposing labels such as cross-impact analysis. The most important resource of the futurist, however, is human reasoning power. He often seeks to break away from conventional cognitive procedures and engage in "lateral reasoning," to probe "system breaks" or weigh "counter intuitive" possibilities.² One might say that the futurist endeavors to foresee the unforeseen or unexpected and to study their possibilities for improving the human condition.

Perhaps the computer is the most important mechanical tool of the scholar studying future alternatives. The Delphi methodology, also is important as a means of attaining a consensus or agreement among experts. It became a widely used method in the 1960's. Trend extrapolation, too, has been used for several decades despite its limitation to linear projections.

² "System breaks" are unexpected developments influencing society; e.g., the Black Plague in the Middle Ages. "Counter intuitive" refers to findings which upset commonly held assumptions as when Mars was probed and photographed by a U.S. satellite.

Less widely known are three simulation models: (1) computer-assisted gaming, (2) mathematical models in which equations describe a particular system, and (3) three-dimensional or pencil-and-paper models that, for instance, can be used in urban planning or to illustrate chemical relationships. Then there is the scenario a device for conjecturing in written form about alternative futures. In their book *The Year 2000*, p. 6, Kahn and Wiener describe scenarios as "hypothetical sequences of events constructed for the purpose of focusing attention on causal processes and decision points."

Multiple correlation analysis and factor analysis sometimes are used in futures research just as they are in educational research. An interesting tool for use in exploring systematically the probable interrelationships among future events is known as cross-impact analysis which is based on quadratic equations. An analogous technique is trend-impact analysis--the correlation and appraisal of how anticipated events will exert an influence on one another.

Yet another example of resources commonly used is the experience compression technique. This may be likened to an intensive workshop based on futures-planning and involving key or leadership personnel from, say, business or education. Participants from such fields engage in one to two weeks of intensive study. They project, or are confronted by, probabilistic developments that might occur in education, business, or a branch of government in a year's time. As "experience compression" suggests, the person involved must reach carefully reasoned decisions and choices in a few days; decisions that normally would be spread over much longer

intervals. The presumed quality of choices that are made among alternative procedures are studied and evaluated on the last day or two of the compressed experience.

POLICY AND FUTURES RESEARCH AS USEFUL TOOLS FOR THE EDUCATIONAL COMMUNITY

Futures research and conventional planning contrasted. Since man has made plans for the future since earliest times, what distinguishes planning based on futures research from traditional attempts to influence tomorrow's events? Some of the specialists interviewed during 1971-1972 made the distinctions which follow.³

- (1) Futures-planning is deliberately directed by the planner's examined values and is action-oriented. It emphasizes alternative avenues rather than linear projections and concentrates on relationships among probabilities, their cross-impact upon one another, and the possible implications of such influences.
- (2) Futures-planning is designed to point to more alternative courses of action than does conventional planning; to keep good ideas from being overlooked.
- (3) Traditional planning has tended to be utopian, to see tomorrow merely as an improved model of the present. Futures research recognizes the need to anticipate and to plan genuinely different concepts of the future.
- (4) It relies more heavily on the rational study of anticipated developments and their consequences and gives less heed to statistical analysis or projection per se.

To sum up, the focus of futures planning is not on reforming the past--not on refining the errors of the present--but on conceptualizing and on creating a better human and physical environment as the

³ The specialists were Olaf Helmer, Thomas Green, Ted Gordon, Willis Harmon, and Warren Ziegler.

result of considering alternatives and their consequences before they are translated into action.

Future research and professional education. Moving from theory to practice, what are some of the educational implications of futures studies? A part of the answer resides in the preceding paragraphs: future-oriented policy research applied to education affords leadership an opportunity and procedures for choosing methodically among the best of foreseeable alternatives. More explicitly futures research appears to have the following merits:

- (1) To provide clues as to probable developments in the biological, physical, and social sciences, in technology, and in economics with a bearing on education.
- (2) To establish an "early warning system" with regard to potential problems or developments likely to influence the schools.
- (3) To identify "educational indicators" analogous to established social indicators (the birth rate, crime rate, GNP, etc.) which can guide professional policy-decisions.
- (4) To keep educators advised of futures planning on other fields, (such as the "education business") which have a bearing on public education.
- (5) To provide techniques (e.g., cross-impact analyses) which can be adapted to, or borrowed for use in educational research studies.
- (6) To supply means of identifying research projects to be supported, or rejected, by funding agencies.
- (7) To provide a way to obtain through modified Delphi methods a reasoned working agreement as to educational changes to be sought by leaders in U.S. education.
- (8) To make use of policy research to determine what appear to be the best choices among self-fulfilling

prophecies and subsidizing the supportive research which the prophecy suggests.⁴

- (9) To afford a means of increasing the value of broad-based participation and sound group processes and decreasing decision-making based on hunches or intuition, expedience or presumed self-interest.
- (10) To provide a focus, at state and local levels and for professional organizations, on constructive, optimistic planning activities and follow-up during a period of malaise in education.

Ways in which futures studies and policy decision research may be of particular use to the USOE or NIE are developed in the closing pages of this précis when conclusions and recommendations are presented. Before they are considered, however, it is important to review two significant points which are part of the total study and which are relevant to many of the recommendations for USOE leadership in research and development. One of these is an examination of problems that need to be more clearly understood by the educational community as well as by society as a whole. The second is a résumé of data which strongly suggest that the years between 1973 and 1985 hold great promise for containing and then ending the deepening troubles and worsening crises which have threatened to swamp the nation and its schools for more than a decade.

BROAD SOCIOEDUCATIONAL PROBLEMS IDENTIFIED THROUGH FUTURES RESEARCH

During 1971-1972 a distinct central tendency was discernible

⁴ The use of modified Delphi methods and USOE support for self-fulfilling prophecies can be of crucial importance. Just as a patient doomed to ill-health or death may change his behavior and live for years to fulfill a physician's expert advice, so the schools too can be helped to "recover" from many problems if teachers are exposed to sound prophecies based on expert opinion and supportive research.

in the thinking of futurists with respect to the nature of problems confronting society in the U.S. Most social and physical scientists, mathematicians, biochemists, logicians and other highly prepared personnel engaged in policy research differed only in minor respects in their diagnoses of the country's ills.⁵

Ten major problems identified. The problems identified were as follows:

- (1) The crisis of crises. The accumulation of crises in past seven or eight years was deemed serious. Difficulties which might have been handled singly became virtually impossible to cope with in the aggregate. Among the ominous sociopolitical and economic indicators were the threat of bankruptcy in some U.S. cities, sustained international tensions, many forms of dissent, inflation, unemployment, growing breaches in law and order including the problem of clogged court dockets, and various forms of racial tension which had not been significantly eased despite emphasis on cultural pluralism and human rights. In effect this major mosaic of problems can be described as a crisis of crises.
- (2) The credibility gap. The loss of credibility--of Glaubwürdigkeit--by persons or groups in authority is creating another "American Dilemma." Even the most legally constituted authorities--the president, law enforcement agencies, parents, and teachers--have had their authority ignored, denied, or threatened.
- (3) Institutional overload. Ambivalent attitudes toward authority is related to a third problem: the growing inability of institutions such as schools and courts of law to adapt to their new roles and tasks. In part this situation arose because some agencies, such as the schools, have been called on to assume responsibilities that they were not designed to fulfill and which they are not presently prepared to handle. Bureaucracy and lack of funds have compounded the problem.
- (4) Disagreement over the "good life." Lack of agreement as to the "best" quality of life--the nature of "The Good Society"--has in itself generated a crisis. The

⁵ All of these points subsequently are elaborated in the body of the report, cf. Chapters II and III.

social, economic, political, ethnic, ecological, industrial, religious, and business-labor cleavages here run deep. And the schools, as a speculum reflecting society, are experiencing a major problem in identifying the nature and qualities of the contemporary educated man and woman when there is no clear social agreement as to the good life to which school has traditionally prepared them to contribute.

- (5) The value crisis. For most of "Middle America," which was a very broad segment of the population in the 1920's, the nature of the social properties and amenities was clearly understood. One was brought up knowing the answer to what was good taste, proper dress, and appropriate social behavior. Today there is a violent value crisis which leaves many persons bewildered as to what is "right" and "wrong" with respect to such matters as drug abuse, pornography, the role of women, sexual mores, the functions of the church, and the like.
- (6) Equity versus equality. The matter of what constitutes "equity" has become a major problem-question. How does an equitable educational or job opportunity differ (if it does differ) from an equal one? Is merely equal treatment fair and just, or does justice reside in different treatment for the gifted, the disadvantaged, the culturally gifted, the handicapped, the very young, and the very old?
- (7) Rejection of egalitarianism. An unrecognized rejection of equality in American democracy is a source of a problem intimately related to point six above. Judging by overt behavior rather than what many citizens say, a large majority seeks "equality with the top ten percent" rather than merely an equal share of the material goods and privileges provided by a technologically sophisticated society. They conceive of democracy as a foundation for upward mobility; a means of rising above one's father's station in life. Neither democracy nor U.S. education has an adequate coping doctrine with which to confront the inevitable resentment of young adults who are corroded by frustration when they begin to realize that they have failed to find room at the top and consequently are dissatisfied as production workers, salesmen, technicians, and so on.
- (8) Lack of a future-focused role image for youth. As a concomitant of point 7 above, it would be noted that too little has been done in family life and in schooling to help children and youth develop a satisfying personal-vocational self-image that will prove to be realistic as they grow older. This lack of a future-focused role image poses a substantial challenge to

our schools as they endeavor to help motivate young learners to project themselves into a world of work of the future in which they experience dignity, respect, and other rewards in any one of many socially useful jobs rather than wistfully longing for so-called "prestige" jobs which actually require and employ only a small fraction of our manpower as professional workers, executives, owners, and entrepreneurs.

- (9) Insensitivity to changing patterns of survival behavior. In the almost continuous eras of scarcity which preceded the development of industrial capacity in the Western world, successful survival behavior often involved becoming a part of the hereditary, ecclesiastical and military minority that had the pick of the simple luxuries and limited security that were available. Today, with a substantial array of consumer goods and services available to most Americans we have the problem of changing our patterns of survival behavior from medieval attitudes of suspicion, self-aggrandizement, and competition for scarce goods. Our survival as human beings (and perhaps even as a species) today depends to an increasing degree on mutual understanding, empathy, ability to reach agreement through interaction and reasonable compromise rather than by resort to force or by "pulling rank." Obsolete ideas regarding roads to survival need to be discarded quickly so that schools will be in a better position to free children and youth to develop more ecologically sound and humane relationships.
- (10) The haves and the have-nots. A final crisis that most scientists interviewed in this USOE study felt to be a severe one was made up of three components: unwise use of technology, rapid increases in world population, and consequential ecological problems. It can most simply be labeled the "have-have not" problem. What it boils down to is this. In the early 1970's, the U.S. with approximately 6% of the world population, was consuming about two-thirds of the raw materials such as copper, coal, and oil that comprise the world's GNP. Theoretically, in 1973, if we increased our consumption by 50%, we could absorb all of the world's consumer goods. Even now the purchasing power of Americans at the U.S. poverty level is above the consumption level of the top 25% of whole populations in so-called developing countries. As one result the world's "have" nations--especially the U.S.--are on a collision course with the impoverished Third World and are severely harming the ecosphere in the process. It seems clear, in terms of the welfare of the planet, that we must recognize that there are limits to affluence, to technological exploitation and to population increase,

and endeavor to move toward a policy that will reconcile people everywhere to the need to find satisfaction from sources other than acquiring material possessions.⁶

For the most part these ten problems and the ineffably complex dilemmas and issues they pose have not been thoroughly attacked or even widely discussed. Not unexpectedly under these circumstances virtually no serious thought has been given to what the ten problems or crises imply for curriculum change.

The educational significance of the problems and dilemmas listed below is three-fold. First, since schools mirror the culture that supports them, social decisions are needed to restore a sense of certainty as to the purpose of education. Second, a consensus--or at least a working agreement--needs to be reached as to how the curriculum shall be modified to reflect these social decisions when they are reached. Finally, the fluid nature of the problems suggests the need for schooling--for the curriculum--to be maleable; responsive to new developments to and the need for such changes as these developments require.

As noted at the outset of this section, one of the pressing responsibilities of leadership in education is to begin to find ways in which social decisions and policies can be reached on problems like those above. Fortunately, the mid-1970's is a time of brightening prospects for making these deferred decisions; a time in which to design the instructional strategies toward which they can help the schools to move.

⁶ Cf. The Limits to Growth, in the bibliography. This is a report on mankind's predicaments as identified by the Club of Rome Project.

Hopeful prospects for achieving major socioeducational changes. Many of, not all of, the ten problems identified above either have occurred or have been created during the 50-year interval between 1920 and 1970. Particularly since 1940 there have been unprecedented changes in our lives. To phrase it succinctly, we have been groping our way through a crisis of transition which has generated enormous, cumulative tensions. Our rapid transition from a familiar, semi-agrarian yesterday to an unfamiliar, technologically complex tomorrow was a genuinely traumatic experience. To borrow Alvin Toffler's useful coinage, we suffered severely from future shock--the premature arrival of the future.

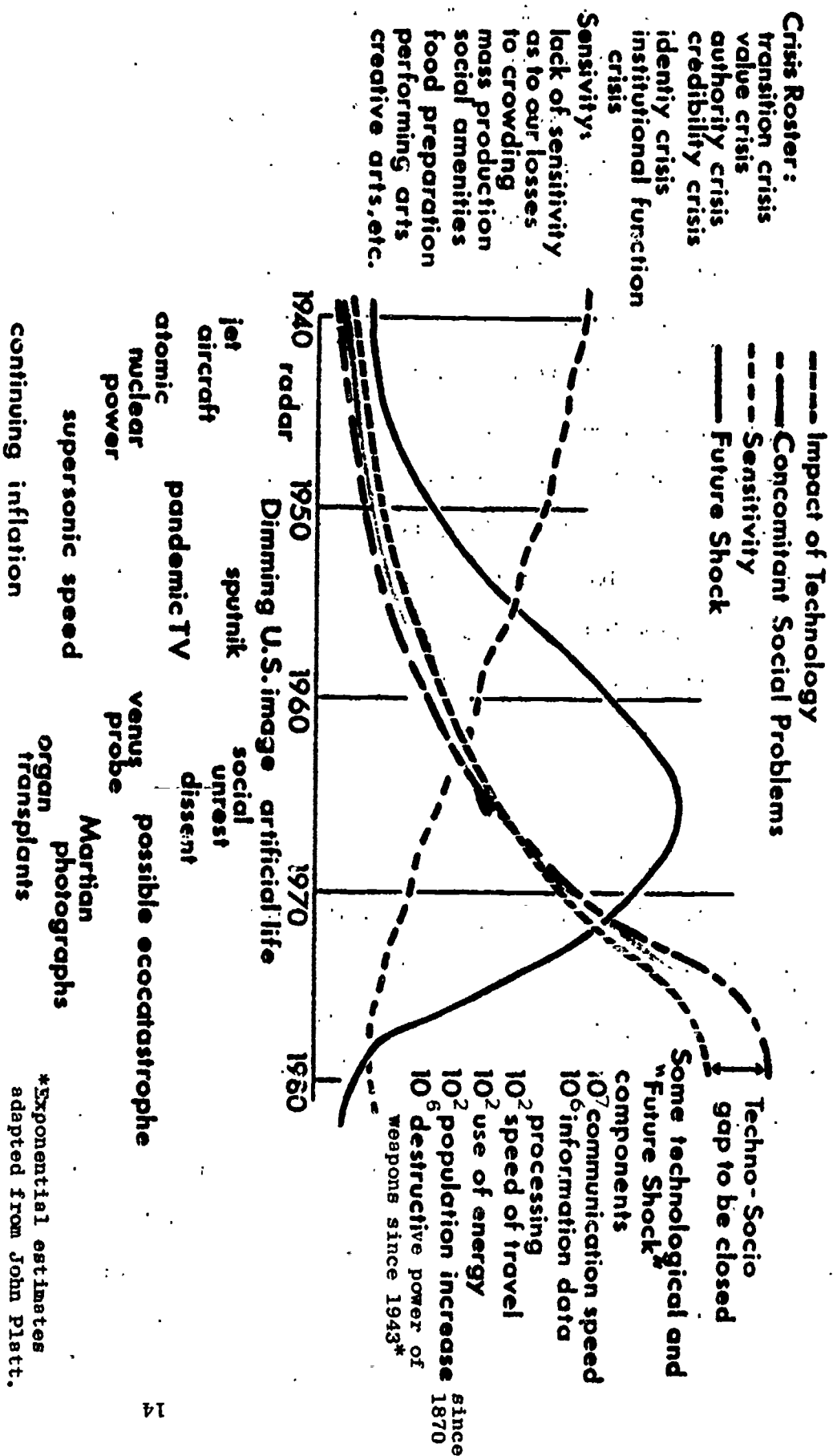
The brightening prospects for slowing and then reversing the social confusion created by the phenomena of too-rapid change are illustrated by the model on page 14.⁷ The model suggests some of the extent of change in the 30-year interval between the early 1940's and early 1970's. The line labeled "Impact of Technology" proposes that the exponential influence of technology is likely to begin to top-off in the next two or three years.⁸ The model assumes when this happens that the concomitant social problems which are diagrammed also will diminish as causes of difficulty in our lives.

⁷ Figure 4 on the next page is one of a series of models that also appear in Chapter II in which the points summarized here are elaborated. The model is duplicated here because it helps to clarify the text in the précis.

⁸ Note that it is the impact of change as a force influencing our lives which tops off. The rate of technological change is less likely to slow down. At the same time there appear to be relatively few inventions on the drawing boards that will have the life-changing influences created since 1940 by nuclear power, university TV, instantaneous communication, or the computer.

FIGURE 4. COMPOSITE OF FIGURES 2 and 3 WITH "SENSITIVITY INDEX" ADDED

MODEL ILLUSTRATING ANTICIPATED TOP-OFF IN THE IMPACT OF TECHNOLOGICAL AND SOCIAL CHANGE

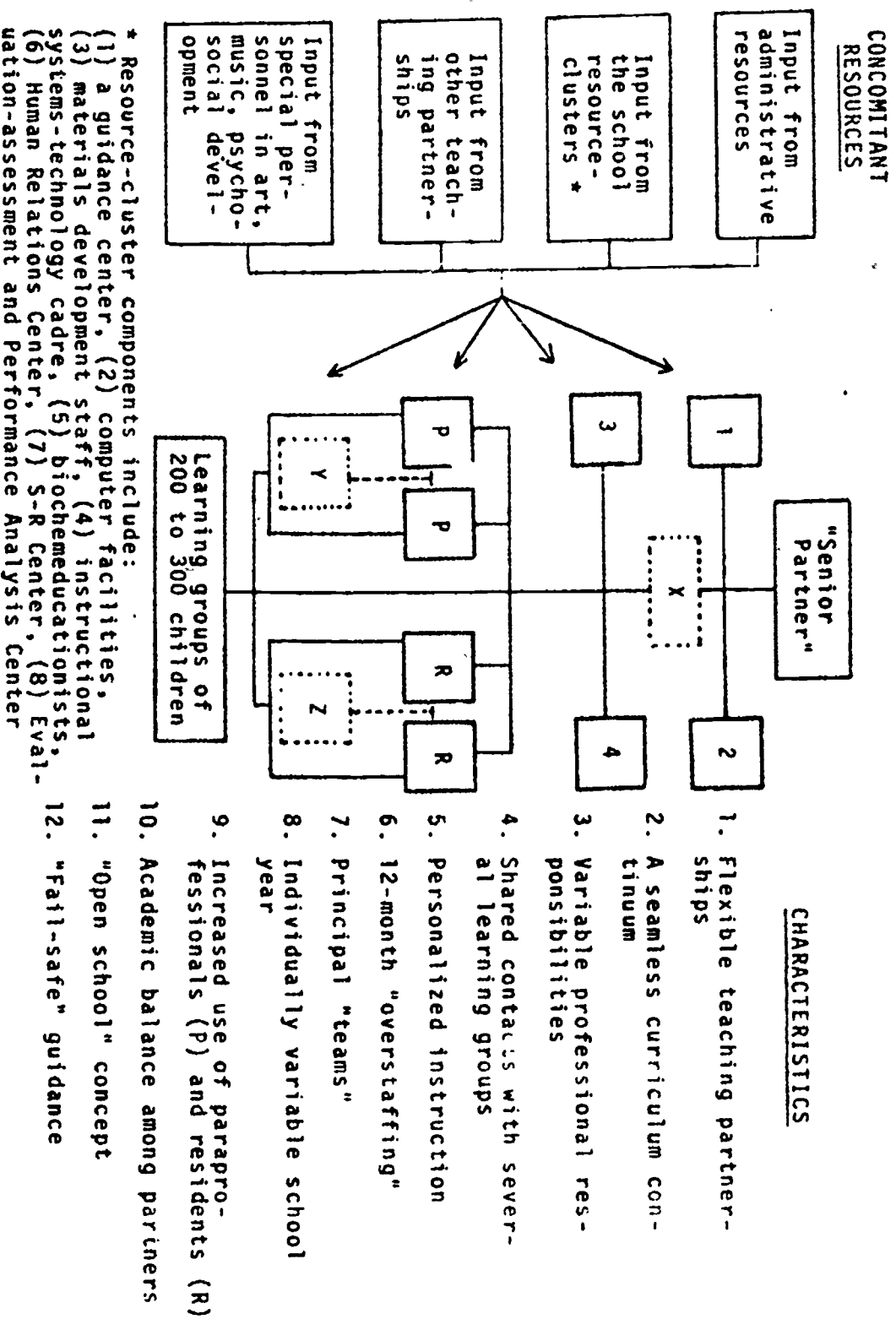


This optimistic conclusion was suggested by John Platt who, as the model indicates, points out that technogenic changes can have only a decreasing influence because (1) we can't exceed instantaneous telecommunication speeds (2) some of our weapons are already too deadly to use (for instance, we have felt impelled to dispose of our biochemical arsenal), (3) a 10^6 speed-up in data processing has changed our way of life so much already that further speed-ups will not have a commensurate influence, and (4) a 10^2 increase in speed of travel, in energy use, and so on, has brought about changes to which we have by now become fairly well accustomed. In sort, then, we have been shaken up by a transition that gave us the equivalent of 50,000 years of historical change in a mere 50 years. We have survived the shake-up--albeit in a psychologically battered condition--future shock is abating, and we may even begin to restore some of the sensitivity that the model suggests we have lost in the past four decades.

CONCLUSIONS AND RECOMMENDATIONS

The educational significance of the future resides in four proposition. First, we can choose rationally among alternative futures, ceteris paribus, and in the process of doing so begin to fulfill our social prophecies with respect to the quality of life we want to achieve. Second, we have an opportunity to create a continuum of lifelong education opportunities of such patent value that the public's wavering moral and financial support for the schools can be restored and increased. Third, a continuum of lifelong learning can be conceived of as teaching and learning which transcends our present systems of schooling; teaching and learning with many problems gone

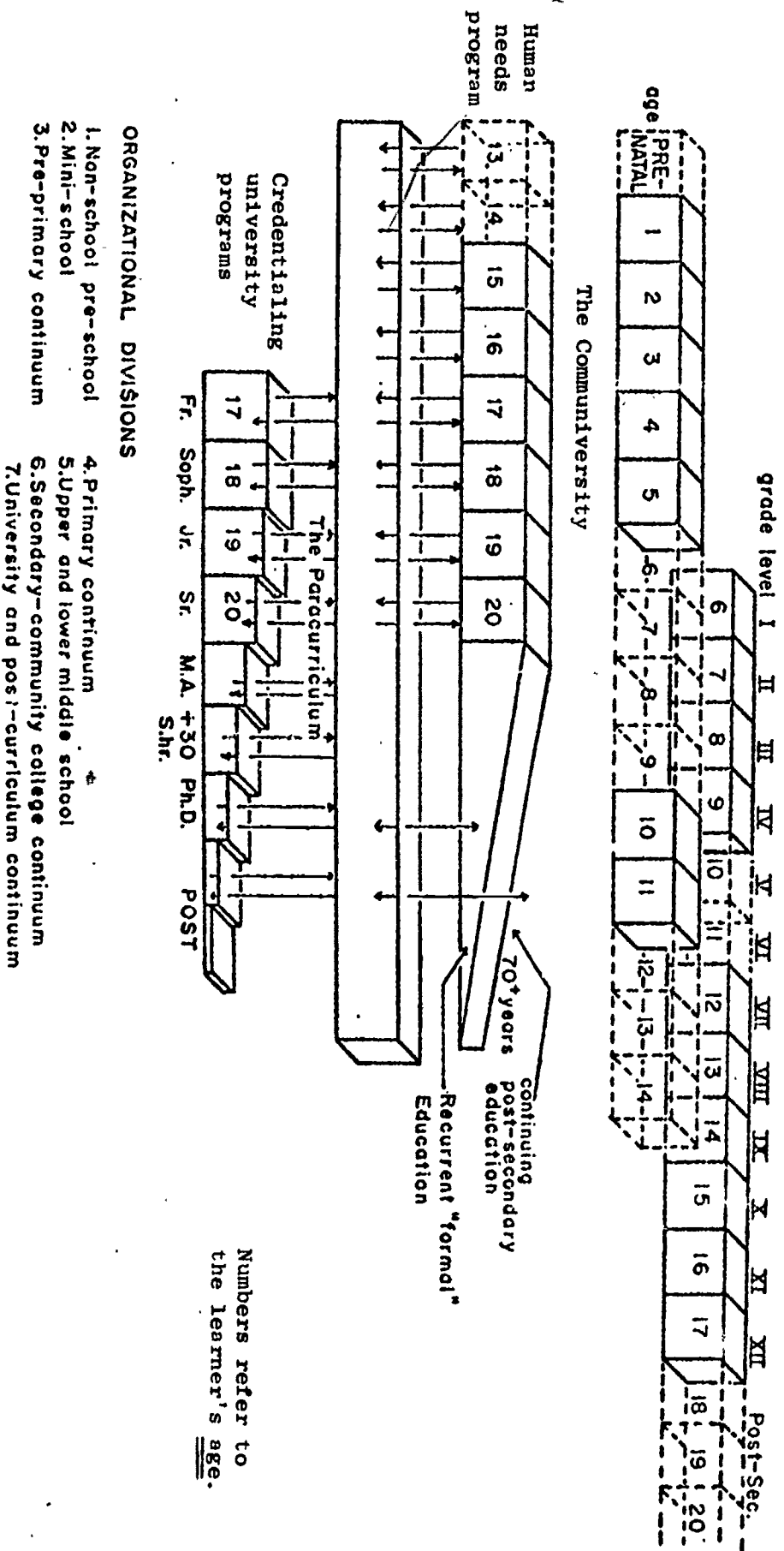
FIGURE 7 MODEL OF THE TEACHING PARTNERSHIP AND ITS ASSOCIATED SUPPORT SYSTEMS



"DIFFERENTIATED STAFFING MODEL"

FIGURE 5

AN EMERGING SCHOOL STRUCTURE FOR THE 1980's



and only virtue remaining in new instructional environments.

Fourth, we already have many excellent and important resources and potential innovations in the U.S. educational idea-bin. By refining and using them during the next decade, a unique approach to equitable education can be made within the present basic structure of the educational community.

1. Broad focal points for the USOE: tactics and strategies suggested by futures research. The four chapters that follow provide the substance of this report. However, without the present summary they are like a mosaic, one for which the design is ready and for which the stones have been cut, but which has not been pieced together to provide a panorama of the educational terrain of the next 5 to 15 years. Although the following "educational tactics and strategies" draw on the material presented in detail in later chapters, they are more than a summary. They serve as a guide book giving suggestions regarding a suitable route across the educational terrain which is covered in Chapter II through V.

The recommendations for research and development have been numbered for the reader's convenience and to help identify main routes to follow in the quest for a desirable reformation in U. S. education.

(1.1) Seamless curriculum. The most important single strategy for the USOE to employ in the next decade is one of moving toward a seamless, lifetime continuum of educational opportunity. Chapter IV contains (a) the rationale for this move, (b) a description,

with models, of the structure of such a continuum, and (c) an explanation of the teaching partnerships which supersede team teaching in a continuum. For convenient reference two models presented in Chapter IV also are included here on pages 16 and 17 although, lacking the text of that chapter, they merely suggest the broad concept of the seamless continuum and its possibilities for welding together education--the individual's total input-for-learning--and schooling which is society's effort to supplement the learner's education. The models, when they appear again in Chapter IV, are discussed in detail.

(1.2) Idea gap. An important strategy in future development is to narrow and, if possible, to close the "Idea Gap" that exists between the USOE and some U.S. educators. Patently, the mission of the USOE is limited by statute and restrictions as to funding. Nevertheless, it exerts a powerful influence which probably will increase as its service and research functions grow in the coming decade. Therefore, state and local personnel need to know more rapidly and completely what is developing with respect to educational renewal and reform, what state and local personnel can and can't do, and what goals federal leadership seeks as the USOE works to advance the national interest.⁹ It is easy to propose that the idea gap be closed; quite another matter to remedy the problem. For one thing, Regional Offices of the USOE might be urged to study coping tactics, More deliberate planning of briefing sessions for state school officers

⁹To encourage grass roots understanding, it is urged that professional groups such as the ASCE, AACTE, or AASA (as well as local groups) be encouraged to participate in federally funded research and development which will help disseminate information among teachers and administrators.

and key superintendents and deans is needed. These briefings could be held early at such meetings as those of the AACTE, AASA, AERA, or ASCD. But most important--according to survey data--is the reduction of the "crisis-and-crash-program" approach to multi-million dollar spending by preliminary study, exploratory discussion, and long-term study designs.

(1.3) Avoid overemphasis on atypical and culturally different.

A third important strategy is to deploy funding and energy at all levels of education rather than merely to place greatest emphasis on the poor, the culturally different, et cetera. Freud's contributions would have been even more broad and deep if he had not concentrated so extensively on troubled or disturbed patients. The USOE in the coming decade should not repeat the "Freudian error" of working too exclusively with atypical children and youth and with problem situations to the neglect of the larger pupil population.

(1.4) Change strategies. For the next several years more

emphasis should be placed on change strategies and proportionately less time on innovations. We already know some directions in which to go, ergo the USOE should stress the how-to-precede tactics that will move us forward. This should help to alleviate the very real problem that resides in the lack of implementation of yesterday's innovations.

(1.5) Student involvement in program planning. More

stress should be placed on the importance of mature students being involved in and responsible for planning their own programs. We also should endeavor to reduce academic red tape at the secondary and post-secondary levels. While encouraging freedom to plan, we should

emphasize the consequences of students' faulty choices.

(1.6) Alternative forms of education. We should continue to support alternative forms of education--particularly those involving responsible community participation--but with especial emphasis on research on projects which promise results without greatly increasing the per capita cost of instruction. The concept of the paracurriculum (cf. Chap. IV) is particularly important in this connection as is the proposed new concept of seamless post-secondary education.

(1.7) Career choice strategies. Through mass media and the strategic deployment of funds, we should try to encourage non-college-bound youth to make realistic, satisfying career choices--insofar as possible--in technical, service, and production type jobs. Also we should consider selective funding of post-secondary students to encourage their entry into fields where manpower needs seem most likely to exist.

(1.8) Financing post-secondary education. In the face of increasing resistance to the rising cost of education, we should explore new ways of supporting higher education so that the beneficiaries of this education pay a larger share of the cost. It is recognized that current legislation has a bearing on this point, Nonetheless, it is suggested that the Federal government consider financing post-secondary students by further study of such devices as interest-free loans to students rather than paying for education entirely or largely from conventional revenue resources. Loans up to \$20,000 might for instance, become interest-bearing upon graduation. They also might be counted as tax-deductible in each of the years

in which they were repaid in annual installments in an amount of the student's own choosing. To insure repayment if the loans are not repaid five years after graduation, modest interest and principal payments could be added in proportion to the debtor's earnings when he reported his income to the Internal Revenue Service.

(1.9) Future-oriented teacher preparation. Since most undergraduates in education probably are being prepared for schools as they are today, it would be prudent to begin now to study tactics for the education of future-oriented teachers for 1980's classrooms. Their experiences should sensitize them to alternative social, biological, and technological futures and problems, include new content and recent developments in methods, involve them in new approaches to (or substitutes for) student teaching, emphasize personal strategies for coping with information overload in their academic specialties, help them grasp what their roles are in a lifelong educational continuum, and emphasize preparation for work in situations involving differentiated staffing.

(1.10) Shared responsibility for teacher preparation. As a corollary of point nine above, encourage close cooperation between local communities and teachers colleges in pre-service and in-service education ventures. The model in Figure 7 in Chapter IV deals with staff deployment. It includes the idea of having young teachers in residency during their first year of service and jointly supervised and guided by both school district and teacher education institution.

(1.11) Accountability. Begin to interpret "accountability" in three dimensions: (a) community, (b) school, and (c) child. About 100 years ago the U.S. community of Tom Sawyer's day probably was more accountable than it is today. The testing movement, circa 1930 made the child accountable, while in the 1960's the schools were pressured to become accountable. Balance among the accountability responsibilities of all three needs to be restored. An important research study might deal with the meaning and nature of "balanced accountability" in education as well as with how to achieve it on a broader basis than on performance per se.

(1.12) "New impact" research in substantive fields. We should endeavor to encourage, in all disciplines, new impact research with a bearing on education. We seem since the late 1960's to be in a valley between crests of seminal research and its applications. Fresh and novel research should recognize and, if possible, help to reconcile the three-way split among the proponents of didactic (telling), heuristic (discovery), and humanistic (self-actualizing) approaches to instruction. More explicitly, federal agencies such as the National Institute of Education might seek to stimulate a "second round" of research in disciplines related to education (and involving professional educators) analogous to those that led to the "new math" of a decade or more ago.

2. Recommendations: specific suggestions for research and development in education between 1973 and 1985. The proposals below

tend to maximize the importance of long-range (10-15 years) planning versus the advantages of short term (2-3 years) plans conducted under USOE and/or NIE auspices. They also emphasize, when possible, the importance of participation and of process in planning--but take careful note of the need to create and to maintain situations which permit strong leadership to function.

General Proposals. A number of the recommendations are intended to stress the need to clarify our educational goals in a time of uncertainty and value-crisis, and to shift more of our efforts from quantitative and materialistic to criteria for "good" education to greater heed for quality-of-life (QOL) factors in both schooling and the totality of educational experience.

It should be kept in mind that the proposals below are based on intensive interviews with futurists. Different or additional suggestions might have come from other sources. The recommendations follow:

(2.1) Implementing a lifelong learning continuum. It is suggested that an experimental seamless curriculum continuum be developed in one of the "New Cities" such as the Minnesota Experimental City or under the aegis of the Experimental Schools programs that recently have been funded. Patently, the idea of implementing a seamless learning continuum can only be done by a large educational unit such as, say, Minneapolis or in a major New Cities setting. As noted in Chapter IV, the continuum would extend from early childhood education through old age and, if possible, should include community college or "communiversity" resources for many years of non-terminal and highly diversified post-secondary education predominantly if not

exclusively on a non-credit basis. In the writer's opinion, this may prove to be the single most important recommendation made in the report. Furthermore, it could be of an educational interest and significance that transcends such historic ventures as the Eight Year Study (1934-1942).

(2.2) Penetration of the education field by business. We should sponsor a study, or perhaps a continuing center, to explore the flow of new developments in the "Business-in-Education" field. The penetration of education by business may well suggest important new cooperative relationships among the school, government agencies, and U. S. business. What, for example, can be done to explore and profit educationally from the importance of a multibillion dollar corporation building and operating schools for a large city independent of the community's established school system (August, 1972).

(2.3) Futures research conferences. Consider having the two USOE Educational Policy Research Centers jointly sponsor in the Washington area a three-phase futures planning conference.¹⁰ It would be valuable for such meetings (a) to identify biological, sociological, and technological developments with a direct bearing on human futures and on education, (b) to study their social consequences, and (c) to advise the Commissioner with respect to an action agenda for the USOE. Questions pertaining to values, to equity in education and to realistic goals for schooling should be given priority in such a futures research investment. Also, considerable attention should be given to the

¹⁰Initial ideas and possible personnel for such a conference were discussed with the Commissioner and his senior associates in the spring and early summer of 1971.

studies should be invaluable to curriculum workers, stimulate activity in education-related disciplines, and provide ideas and guidelines for instructional systems technology personnel and for commercial publishers. Professional associations for teachers and supervisors would welcome involvement and could help to encourage the grass roots penetration of both ideas and media development.

(2.6) Social indicator inventory. Behavioral scientists often speak highly of social indicators. It is possible that there would be value in a reverse or hindsight study of socioeducational indicators during the years 1950-1972. Such an inquiry would endeavor to identify subtle factors that were ignored or unrecognized when they might have served as an "early warning system." Data here should be helpful to the extent that indicators of future problem situations can be found in the records of the past.

(2.7) Computerized data bank for students. An inquiry might be made as to the feasibility of a computerized national data bank for U.S. students. This presumably would contain key academic records of the sort kept in schools' cumulative record folders, but with due respect for the "confidentiality" which many guidance specialists defend. The uniformity, speed of transfer, and widespread availability of data from such a bank recommend that the idea be explored on a pilot basis. A university with suitable resources and adequate support might well serve the entire American educational community.

(2.8) Future-focused and realistic career guidance. Rapid increases in college enrollments, and social indicators such as employment trends, bring to mind the merit of research in secondary

school advisement policies and in university admissions policies to fields of study in the context of jobs likely to be available in the late 1970's and 1980's.

(2.9) Low cost research through graduate school channels.

The USOE may be overlooking an important freshet of productive low-cost research accomplished through the subsidization of doctoral students seeking thesis topics. It is recommended on an experimental basis that the NIE consider inviting professors in ten universities to apply for small grants (say, \$12,000 each for one year). The professors would then recruit and guide ten doctoral students through small-scale research projects chosen from an annotated list prepared by the USOE. An equitable portion of the \$12,000 (perhaps 10%) could be utilized by the professor for expenses involved in his personal guidance of the research; the remainder would subsidize the student-scholar.

3. Proposals aimed at the elementary and secondary school levels. As a result of conversations with specialists in policies studies, six ventures including research projects are recommended.

(3.1) Controlled study of lower school-leaving ages. A carefully controlled and directed study might be made of procedures that might be followed in lowering of the various school-leaving ages now mandated by state law. In a seamless, lifelong educational continuum--one with infinite, planned exit and re-entry privileges--at least some young learners might leave the classroom at from 13-14 to 15-16 years of age. Parents, counselors, employers, and other school personnel would need to be involved in a close, sound planning

relationship to avoid the danger of exploiting youth. Also, the initial experiment with lower leaving ages would work best in an "open" school continuum such as is described in Chapter IV, and in a setting such as the "New Experimental City" in Minnesota (see point 2.1 above).

(3.2) Definitive study of the value of early childhood education. As was noted in the 1972 Yearbook of the NSSE, there is little hard data to lend categorical support to the assumption that early childhood education (ECE) can and will influence the behavior and development of young learners.¹¹ Since a number of futurists tacitly or explicitly forecast extension of public education downward to age 3 or 4, an eight-year study of children from ages 2 through 9 seems highly important and is recommended. Experimental and control groups of black and white children from diverse social backgrounds should be involved over the eight year span. The target would be collection of hard data on the comparative social and academic performance of matched nine year-olds who had and who had not had three years of pre-primary developmental in-school experience.

(3.3) Realistic cost estimates. Most suggestions for improving education in the future seem to involve further substantial financial outlays. It is urged that any programs of a massive or extensive nature be projected by the NIE and USOE contracting parties to ascertain their costs at annual or biennial intervals if instituted on a wide scale. A case in point: it has been estimated by one futurist that if all of the objectives in Goals for Americans (1960

¹¹ Chapter XVI, p. 367.

Report of the President's Commission on National Goals) had been achieved the annual cost would have been three times the yearly GNP of the U.S. during that era.

(3.4) Financial strain in school districts. Research might be conducted in one or more of our 20 largest cities to ascertain whether (and, if so, when) present trends in elementary and secondary programs could lead to school unit bankruptcy. A study of viable preventive measures should be included.

(3.5) Research in the realm of legal rights and responsibilities. A major legal study probably is needed to ascertain what constraints and what open avenues there are for innovations and alternative schools, compulsory attendance, student-teacher-parent rights and responsibilities, flexible accreditation and admissions, tuition charges, and diversified staffing.

(3.6) Diversified staff deployment. There needs to be greater study of the nature and of the merits of diversified staffing including the teaching partnership concept presented in Chapter IV. Diversified staffing should be the object of examination at all levels (also cf. 4.3 below).

4. Post-secondary education. Imaginative and "open" approaches to innovations and to economies at the post-secondary school level are needed. Rapid growth in enrollments since World War II, and especially since 1960, had created certain imbalances and academic traditions more reminiscent of cottage industry than of mass production.

(4.1) Education for learners past 60. The concept of lifelong educational opportunity extending to age 70 or beyond needs to be contemplated. Should there, for instance, be provisions for "old married" housing on the 1985 campus? At present one of the great unexplored educational regions is that of the 55 to 80+ learner. Studies in this area need to involve both policy (admission, credit, tuition, etc.) and program (content, goals, individualization, new courses, course reorganization, etc.). It seems highly desirable to set a USOE task force to work exploring the alternative futures for senior students as well as the possible linkages of such futures to an educational continuum, the communiversity concept, and contemporary post-secondary resources for educating the growing above-60 segment of the population.

Pilot programs for the elderly.

(4.2) Since the nature of schooling of broader focus of education for the middle-aged and the elderly will be of growing importance, in addition to a task force study, selected secondary schools, communiversities, and major universities should be urged by the USOE to propose pilot programs in the 40 to 70 age range to increase our knowledge of potential demand, human needs to be met, and possible costs.

(4.3) New approaches to student teaching. An action research venture into a three-year teacher education program (co-operatively designed by community and university) in which student teaching is totally abolished and replaced by a paid, supervised residency should be funded. Much conventional student teaching is not only costly but fails fully to accomplish its purpose. New

ways of approaching the development of classroom strategies need to transcend both past practice and the inadequacies of most performance-based criteria ventures explored in the early 1970's.

(4.4) Better preparation for paraprofessionals. An analagous program for the carefully planned preparation of teacher aides and of paraprofessionals, both at the secondary and the community level should be encouraged. Presumably, such programs would be for one and two years, respectively, but also would facilitate re-entry to the educational continuum for personnel who demonstrate ability. One important caveat: the preparation of paraprofessionals should not be so extensive as to create sub-standard teachers rather than competent helpers.

(4.5) Differentiated staffing in higher education. In the interest of economy, and conceivably--at the undergraduate level-- of efficiency, there should be consideration of a one- or two-year control group experiment in which conventional instruction competes with lower cost, differentiated staff structures using fewer doctorates. Student achievement, compared in terms of performance criteria established for a substantive field could serve as a basis for evaluation.

(4.6) De-emphasis of the trend toward a universal Bachelor's Degree. A re-education program for students, teachers, and parents might well be launched to reverse the century-old practice of advocating the importance of a college education for anyone who can leap the academic, social, and financial hurdles.

For years now--at least for two decades--the educational profession and parents have shown too little awareness that a conventional, universal four-year college education as it is now constituted may not be inherently desirable for many--perhaps a majority-- of young Americans. Continuous methodically planned adult education of comparable quality, greater variety, and increased flexibility is needed as a parallel to the formal higher educational requirements of a credential-permeated society.

(4.7) Postponement of college admission. Consider encouraging delayed college admission. There may be distinct value in supporting the idea that students will perform better and will sometimes even permanently bypass costly college attendance (which may be of no practical personal or social utility) if there is a two- to four-year-interval of work experience in which to begin a vocational career. This suggestion is based on two premises, namely, (a) that in an educational continuum adult (non-credit) programs will provide most post-secondary needs beyond the community college level, and (b) that the baccalaureate program as now organized in most colleges is not designed to meet the vocational and social needs of youth on a universalized basis.

This précis of possible educational futures of significance is already overlong. Although several more points should be made particularly with regard to a model for local school unit organization, teacher licensing based on performance, degree-renewal for teachers, it seems clear that a summary should not threaten to exceed the length of the research report!

LE MALADE IMAGINAIRE?

After months of intensive discussion interviews with futurists it seems safe to say that education, unlike the main character in Molière's 17th Century play, is not an imaginary invalid. The schools actually have been weakened by serious ills just as society has been beset by dangerous crises. At the same time much of the educational significance of the future--as is implicit throughout the report--resides in the fact that the problems are not fatal ones. We already have in our idea bins some of the basic "frontier ideas" needed to carry us through the 1970's. It therefore becomes the task of leadership at the Federal level to strive further to abate the confusion of the waning crises of transition and to build the best of alternative futures on the basis of continued research and development as sketched in the recommendations above.

Emerging opportunities for educational leadership in the USOE and in the NIE make this report on the significance of the future of education even more portentous than it would have been a year ago. Much thought and effort has gone into the development of an infrastructure that promises to facilitate not only research but implementation. With open minds, continued effort, and a measure of luck, USOE-NIE resources should go a long way toward healing the non-fatal illnesses of U.S. schools through heavy doses of implementation--by making changes that we already have enough knowledge to bring into being.

II. POLICY DECISION AND FUTURES RESEARCH: 1972

Ever since he became conscious of himself as a thinking animal, man has had a lively interest in the years that lay before him. The popularity of seers and auguries in the ancient and medieval world was one manifestation of this interest which continues not only to survive but to thrive in the syndicated astrology columns of 1972 newspapers. Alexander, seeking new worlds to conquer, is an illustration of one of many historical figures who inadvertently or deliberately planned to mediate the future. Caesar, Napoleon, Genghis Khan, and other examples are abundant.

By the 18th century, the concept that the future could be anticipated--and to some extent be influenced--had reached a point at which Voltaire and Maupertuis could squabble about the vocabulary of futurism with Gallic vitality. At about the same time, some of the first "futures research" recorded in history was begun. In the aftermath of the French Revolution among the papers of Louis XVI, was found a future-planning document which dealt with "reasoned conjectures" as to how certain alternative developments might influence the future of France as a European power. However, the author, J. L. Favi r, proved to be one of history's less successful futurists since he failed to anticipate the Revolution that impended when he penned his scenario in 1773.¹

¹Cf. Bertrand de Jouvenel, The Art of Conjecture. New York: Basic Books, 1967, Chapter III.

Contemporary backgrounds. Moving to the present we find that by 1967 a creative futures research scholar, Olaf Helmer, was able to write convincingly that in recent years:

. . . a wholly new attitude toward the futures has become apparent among policy planners and others concerned with the future . . . intuitive gambles are being replaced by a systematic analysis of the opportunities the future has to offer.²

The story of how policy research and futures research have moved from Favière's intuitive conjectures to systematic analysis is an interesting one.³ Beginning with "operations research" and related ways of approaching military problems in World War II, the "systems analysis" approach to policy decisions that influenced the future grew rapidly in the 1950's. RAND Corporation was the dominant figure during that decade in providing analytical and--nearly always--researched and documented futures advice to such agencies as the U.S. Air Force.

In the mid-1950's, Systems Development Corporation had opened and was beginning to provide ideas and electronic glue in the USAF Cold War defense system. Soon thereafter, in 1961, Herman Kahn had created the Hudson Institute. Both were operated by some staff members who were RAND Corporation spin-offs or "drop-outs."

One more example serves to suggest the dynamics of change in the 1960's and the debt that policy and futures research owes to

² Olaf Helmer, "The Future of Science." Taken from a then unpublished typescript prepared for publication later in 1967 in The Science Journal.

³ For a smoothly history of the development of the RAND empire, cf. Chapter V in Paul Dickson, Think Tanks. New York: Atheneum, 1971.

RAND. The example is the Institute for the Future (IFF)--a non-profit institute with branches on east and west coasts--which was founded in 1968 with RAND funding and foundation support which included a \$52,000 grant from the Ford Foundation.

So much for a quick glance at the past of futures research. What can be said about the state of the art as we move more deeply into the 1970's?

CENTERS AND AGENCIES ENGAGED IN FUTURES RESEARCH: A SAMPLING

In the next several decades we will ascertain how successfully the United States--the world's most technologically advanced state--will move through the present "crisis of transition;" a crisis created by changes so extensive that they would have been dismissed as preposterous science fiction as recently as 1935. The transition is the result of an accumulation of events so great that approximately 50 percent of the changes of the past fifty thousand years have occurred in the five decades between the early 1920's and the early 1970's.

Because of these great changes the next two decades will be lonely ones for Americans. Having reached a unique technological eminence characterized by great material possessions, there is no one with whom to share problems which the U.S. is the first to confront and decisions without precedent which we must be the first to make. The transition from nomadic hunterman to settled husbandman or from feudalized man to industrialized man were minor shifts by comparison. In addition, these transitions were appreciably longer

and they lacked the quality of irreversibility which characterizes the current biosociotechnological transformations. The U. S. a technologically advanced nation in a world of over three billion people can no longer crawl back into the womb of time. We have so massively altered our biosphere, and contributed to changing it so greatly in the Third World of developing nations, that we cannot return to a pretechnological era without catastrophe.⁴ Nor can we expect Americans--or Nigerians or Thais or Ecuadorians or French for that matter--willingly to return to a moment passed in human history that was more uniformly characterized by want, by disease, by serfdom, and by the arrogant and sometimes whimsical dictates of autocratic rulers.

It is from this crucial transitional period that futures research, especially in America, acquires so much of its significance. Through biosocial and technological planning we are in a position literally to "create ourselves" rather than to be the mere surviving product of a billion years of natural selection that happened to turn out better for the human species than for less fortunate and now extinct life forms. Let us look at the range of persons, agencies, and centers concerned with policy development for the future.

Types of futures research agencies. A variety of individuals and agencies are providing, advice, leadership, ideas, and suggested

⁴For a provocative statement on the dilemma of developing nations, cf. Peter F. Drucker, "Saving the Crusade," Harper's 244:66-71, January, 1972.

procedures in policy decisions. In an effort to suggest with some precision the range and variety of these agencies, each individual or center included in this study is listed in diary form below. They are introduced in the order in which they were visited by the writer. The reason for their selection may be inferred from the statements describing some of their activities and contributions. Although it is not an inclusive one, as of 1971-72, the roster is representative of much of the scope of policy decision activities and future-oriented developments with a bearing on education.

FUTURES RESEARCH AGENCIES

Date visited	Rationale for Visit: Descriptive Statement
Sept. 6-7	Consulted Billy Rojas, Director, Futuristics Curriculum Project, Alice Lloyd College, Pippa Passes, Kentucky. Rojas coordinated the Program for the Study of the Future in Education at the University of Massachusetts, Amherst, for two years. He has an excellent record in developing futures bibliographies and inventories of programs in secondary and higher education "futures" instruction. Currently completing a Delphi study of educational futures.
Sept. 10	Interviewed Edward Cornish, President, the World Future Society (6,000 members) and Editor of the Society's journal, <u>The Futurist</u> . He directs a "futures" information exchange. The Society has sponsored two international conferences (Oslo, 1967 and Kyoto, 1970) and a major U.S. program in Washington during 1971. <u>The Futurist</u> is one of the best current sources of information on the status of futures planning, problems and research.
Sept. 16-18	Reviewed with the Board of the National Society for the Study of Education its future-mediating plans for 1972-75 <u>Yearbooks</u> and new paperbacks which are being developed. Decisions as to publications for the future made by the Board of this 70-year-old organization

must be rated as a powerful determinant of what twenty thousand educators are likely to read and by which they will be influenced several years hence.

- Sept. 24 Conference with Dr. Theodore Gordon, President, The Futures Group, Glastonbury, Connecticut. The Futures Group is a newly formed (April, 1971) agency dedicated to utilizing futures research in providing data for government, industrial, educational, and military policy decisions.
- Sept. 26-28 Visited the Educational Policy Research Center in Syracuse. In addition to interviews with Directors Ziegler and Green, virtually the entire staff was interviewed. Time was also spent with Steven Bailey of the Syracuse Research Institute and Dean David Krathwohl of the School of Education, Syracuse University.
- Oct. 3-5 Studied futures-influencing plans of a major corporation endeavoring better to serve the educational market with learning centers at the 3-8 year age bracket. Attention focused on the future implications of ten early childhood centers opened during the current year in the Pittsburgh area and operated with Model Cities monies. Four of the ten centers were visited and at least 20 staff members interviewed.
- Oct. 6-8 Worked in the area around Hartford, Connecticut. Visits during this interval were made to the Institute for the Future, to the Home Office of The Futures Group, to the Program for the Study of the Future in Education at the University of Massachusetts, and to Smith College. Selwyn Enzer spoke for the Institute for the Future and Wayne Boucher was interviewed as a spokesman for The Futures Group. The provost and administrative staff at the University of Massachusetts met with the writer as did a number of persons at The Futures Center, including its director, Christopher Dede. At Smith College, the education faculty met with the writer who also spent several hours with approximately 50 undergraduates discussing futures studies and ascertaining the knowledge of futures research which had been acquired by undergraduates.
- Oct. 14-16 During this time the investigator met at Greenwich, Connecticut with the senior officers of a multi-billion business corporation. There was a two-day discussion of plans which they were making to work more deeply in the field of professional education.

- Oct. 17-18 At this time visits were made to the EPRC at Stanford. One day was spent with Dr. Willis W. Harman and one day with his staff associates.
- Oct. 19 This day was spent at Menlo Park at the offices of The Futures Group, West Branch. Among persons providing information on policy research were Messrs. Roy Amara, Paul Baran, and Olaf Helmer.
- Oct. 20-22 Three days in the Los Angeles were invested in visits made to RAND Corporation, to confer with Marvin Adelson now at UCLA, and formerly with Science Research Associates. About 15 staff members were engaged in the discussions scheduled at RAND Corporation. Drs. Adelson and Coulson responded to the questionnaires in terms of their experiences in Systems Development Corporation.
- Oct. 28 Met in Ohio with a representative group of Midwestern educators to discuss their views on the future of the middle school
- Nov. 2 In Washington for conferences with Bert Mogin and to make a progress report.
- Nov. 3-6 This time-block was spent at the University of Minnesota in consultation with Arthur Harkins and his associate, Richard Wood, who operated the Office for Applied Social Science and the Future which is supported by the University of Minnesota. Some time also was given to work with persons involved in the NAEYC (National Association for the Education of Young People) which had a three-day conference in Minnesota. Discussions focused on the ideas of educational futures for children of age 3 or below as seen by proponents of increased educational opportunities at this level.
- Nov. 10 Met with the officials of the state ASCD (Ohio) to get some idea of the information and attitudes of this leadership group and their possible impact on educational futures.
- Nov. 11-12 Spend two days at the University of Michigan where conferences were arranged with Dean Wilbur Cohen of the School of Education, Donald N. Michael of the Institute for Social Research, and John R. Platt of the Mental Health Research Institute. Conferences were also arranged with Layman E. Allen and Dr. Quarton, currently director of the Institute.

- Nov. 13-14 Met in Chicago with the Chairman of the Goals Commission of an NEA affiliate, the Association for Supervision and Curriculum Development. Educational goals and policies related at the next 5-20 years were reviewed and discussed.
- Nov. 21-22 Conferences were held with Frank Ambruster and Anthony J. Wiener at the Hudson Institute, Croton-on-Hudson, New York. Current futures research was described and discussed.
- Nov. 23 In New York City, visited the Academy for Educational Development directed by Dr. Alvin Eurich. Information on the futures work of this organization, which recently has prepared reports for the USOE, was provided by Dr. Rexford Moon.
- Dec. 3 Interviewed Dr. Paul Olson and his associate, Dr. Lawrence Freeman. This was at the suggestion of the Project Officer, Bert Mogin. Dr. Olson is Director and Dr. Freeman is Associate Director of the Nebraska Curriculum Development Centers' "Study Commission on Undergraduate and the Education of Teachers." Dr. Olson provided a 30-minute tape based on the survey questionnaire.
- Dec. 5-6 Visit to Dallas, Texas to study a newly built school which is an architectural example of applied futures research and which was funded in part by the Educational Facilities Laboratory of the Ford Foundation. Also interviewed Erik Jonsson, former mayor of Dallas, and father of the "Goals for Dallas" study which had to do with the alternative futures for a major metropolis.
- Dec. 7-8 Visited with members of a rural county staff in Kentucky to identify what ideas or activities they held with a bearing on rural education in their area.
- Dec. 27 Visited with a cluster of publishers both in the paperback business and in a large well-established company to ascertain the status of their future plans for contributing to the educational market.
- Jan. 3-5 In London, England. While there visited over a two-day interval at the Teilhard Centre for the Future of Man directed by Mrs. K. Croose-Parry. Also interviewed the Editor of FUTURES, a journal of forecasting and planning, Mr. Guy Streatfield, at the headquarters of the magazine in Guildford, south of London.
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TRENDS IN FUTURES RESEARCH THEORY SINCE 1960

Changing operational viewpoints. It quickly became apparent in the visits listed above that during the late 1960's and early 1970's there were a number of portentous developments underway in futures planning.⁵ Perhaps the most conspicuous change was a shift away from predictions based on linear projections of the GNP, life spans, birth rates, and similar diverse social indicators that have a bearing on the future and future policies.

If linear projections are construed to be an early development in futures research--let us call it Phase I--then Phase II in the 1960's was concerned with a shift from predictions to exploring what organizations intend the future to be (implementation of desirable prophecies). Phase III, as of the early 1970's, seems to be an analytical and increasingly interventionist approach to the future. This current approach is entrenching a formidable new vocabulary involving terms such as

scenarios	computer modeling
Delphi technique	Monte Carlo method
wargames approach	PPBS (Planning, Programming, and Budgeting System)

New and even less familiar terms of the late 1960's and '70's include:

relevance tree	Morphological analysis
macroproblem	cross-impact analysis
ORPHICS	counter intuitive
system break	contextual analysis

⁵ A diligent effort was made to interpret the survey findings with accuracy and integrity. Interpretation of data should not, however be associated with a given individual or agency unless so identified. Responsibility for interpretations of data is entirely the writer's.

The shifts from Phase I to Phase II can be visualized by means of the three drawings presented in Figure I.

In Model III, line A-B represents a given discipline, e.g., education and line C-D represents another discipline, e.g., biology. The network of intersections represents cross-impact points where research and developments in biology have possible bearings on educational theory and practice, say with respect to biochemical medication of children's personalities in order to make them more teachable or through memory-improving drugs.

An emerging phase of policy research may carry present trends into new forms of applied futures planning, Phase IV. This would involve intervention in possible alternative futures on a much wider scale. Such interventions would evolve from value decisions made as a part of Phase III research and the subsequent deployment of Time, Energy, and Money (TEM units) respectively to impede or to accelerate undesirable future developments. While investing TEM units to attain an organization's purpose is an old idea per se, the methodical, planned creation of socially desirable utopias is new enough to be controversial.

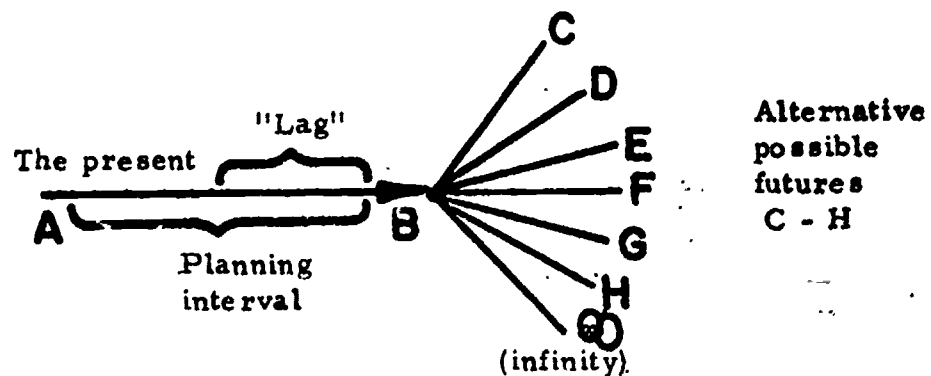
Approximate positions on intervention to be found among the ranks of futurists range through the following four gradients:

- (1) a hesitant "no" or a reluctant "yes."
- (2) We must consider intervention but in many instances we do not yet have enough data or a suitable consensus regarding the kind of environments that are "safe" and "best."

Model I
Classical
Linear
projection
Pre-1960



Model II
Multiple
alternative
futures concept,
ca. 1965



Model III
Concept of
Cross-impact
among
alternative
futures
ca. 1972

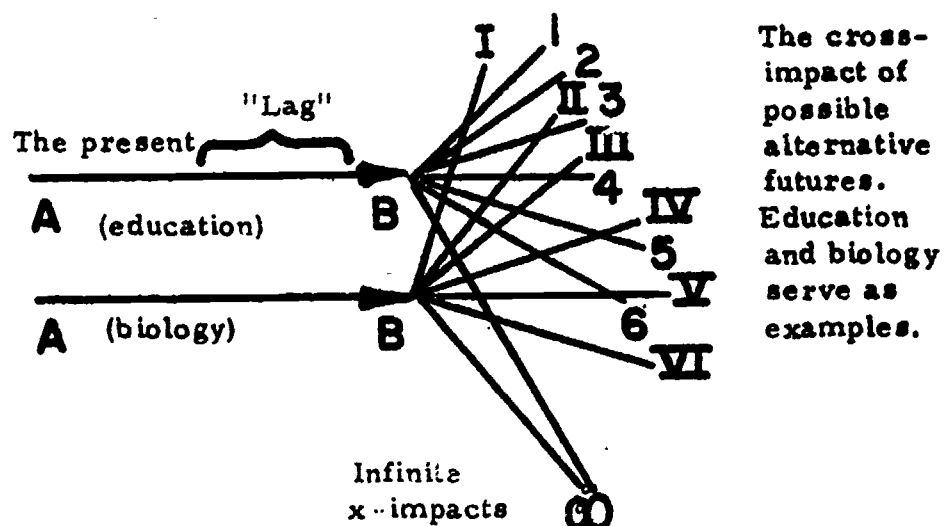


FIGURE 1. Models Suggesting the Increasing Sophistication and Changing Emphases in Futures Research. Model I simply involves preparation for anticipated events in the future, e. g., building a school because of enrollment trends. Model II indicates growing awareness of many possible alternative futures which can be "created," or at least influences, by policy decisions. Model III is a sophisticated version of Model II. It recognizes the interrelationships between policies decisions in business, government, the military, various disciplines (such as education and biology) and how discoveries and policies in one realm effect other realms of scholarly inquiry.

- (3) We are so close to several wide scale catastrophes (e.g., famine and the pollution crisis) that we have no alternative except to begin massive intervention-oriented research.
- (4) Intervention is not only necessary but desirable and enough data already are in hand to provide direction.

Still on the topic of trends, a majority of futures and policy research specialists are becoming interested in short-term (5 to 10 years) rather than long-range (year 2000) conjectures. In effect they seem to be saying, "What can we do now to make tomorrow better?" rather than speculating about possible developments three to ten decades hence. Related to this development, in all probability, is the point that futurists' clients are interested in their immediate problems, opportunities, and tasks to be performed, as well as in their grandchildren's world.

The increased interest in short-range change, however, is not indicative of a long-range "biosphere be damned" attitude. No one among persons interviewed in the present study lightly dismissed the disaster course the world may be on with respect to population, giant plans to redirect some of the world's major waterways, famine, or nuclear conflict--to name a few. All of these, presumably, mandate much greater long-range planning, and policy researchers quickly make this point.

THE STATUS OF FUTURES PLANNING AND POLICY RESEARCH AS OF 1971-1972

Dimensions of belief. While futures planning is too variegated to have a body of widely and uniformly accepted doctrine, there is nonetheless a cluster of shared beliefs which appear to characterize

a plurality and perhaps a majority of futures-oriented thinkers.

These come to a focus with respect to important social problems

for which better solutions are needed. Among them are:

- (1) The value crisis through which long established absolutes with respect to home, family, church, God, country, and honor have become blurred. This is closely linked to . . .
- (2) A conceptual crisis with respect to what constitutes a good model of society and the good life.
- (3) Deeply involved in the conceptual crisis is the question of equity--e.g., what is an equitable (as distinct from an egalitarian) education?

Reflecting the value and conceptual crises mentioned above are their concomitants:

- (4) The questioning of the credibility of even the most duly constituted authority, and . . .
- (5) The increasing inability of organizations--schools, government, legal authorities, distribution systems--to perform either their long established or their newer functions. This is accompanied by threats to the continued preservation of a stable government and to standards of effective business management.
- (6) In contemporary democracies, the lack of a coping doctrine through which to confront man's desire not for equality per se but for equality with the top 10 percent in his socioeconomic milieu.
- (7) The lack of an acceptable future-focused role image in many children and youth; consequent frustration and related manifestations of distress.
- (8) The difficulty of communicating on an international basis the concept that pre-20th century human survival patterns largely have been revised; that new patterns of relationships are needed.
- (9) The task of creating insights and devising practices that will help mankind to approach the have-have not problems in a world in which the U.S. (with 6% of the population) consumes 65 percent of the world's resources in a given year.

Technogenic problems. Certain technologically derived problems and the need to find viable solutions comprise an important sector of the futures planners' cognitive cosmos. Representative of the technogenic difficulties identified are:

- (1) The cumulative impact of rapid technological change since 1940 and . . .
- (2) The task of coping with information overload.
- (3) Problems of dehumanization in an impersonal society and the need to restrict such "freedoms" as unlimited breeding and personally gainful exploitation of the environment.
- (4) Dangers to the ecosystem created as a result of the naive use of technology; apparent needs for international control of the impact of technopollution at a time when all nations covet what promises to be a biospherically ruinous standard of living; the question of whether we can afford not to have much relative world-wide poverty.⁶
- (5) Because of threats to the biosphere, the possible need for the dynamic contraction of the production of material goods such as ten million new automobiles annually rather than continued annual increases in such production.
- (6) How to deploy public funds as needed to foster dynamic contraction of a technosystem in which citizens presently are increasingly dependent on the very technology that is harassing them.

Hopeful outlooks. On the positive side, in confronting the threat of domestic and international social dislocation and technological problems, most leaders in sociotechnical research dealing with alternative futures and concerned with perceptive policy decisions are

⁶ Professor Goesta Ehrensvaerd, University of Lund in Sweden, as of 1971 gloomily chose the year 2050 as the point of incipient decline for human culture and technology. Declining power sources will force us to return to lower technological levels unless we solve the riddle of viable atomic power, he contends.

optimistic with respect to the fundamental power of human reason in skirting catastrophe by making prudent decisions. (Patently, without this level of confidence there would be little if any point in futures research!)

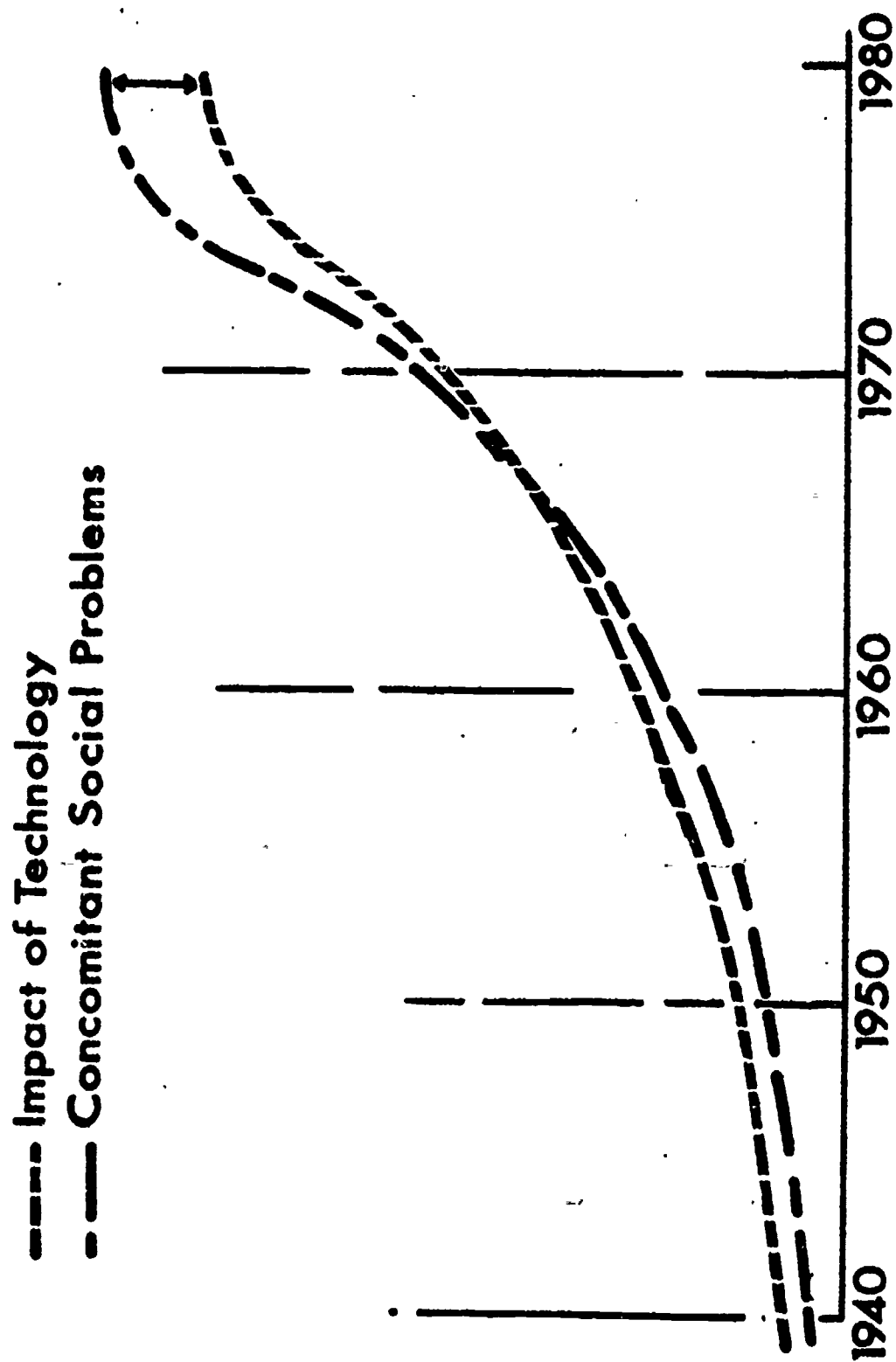
These optimists believe that because of applied, enlightened reason, accompanied by the wise application of technological know-how, much can be accomplished in the next five to twenty years to de-fuse human problems. They point out, for instance, that in recent decades seminal ideas have begun to influence society quickly--in from 10 to 15 years--and that extraordinary goals such as the moon landings can be accomplished very quickly once determination, funding, and creative power are blended in the right proportions. Apparently if we cannot persuade the geni of technology to return to the magic lamp, we can put him to work with a foresight which makes him the loyal servant he was intended to be!

Another development which brings a sense of security is the conclusion implicit in the recent history of science and technology that the impact of the changes they have brought may top out in the 1970's--and indeed are tapering off already. Consider the following diagrams.⁷ In Figure 2 we see the exponential curve of technological change and a comparable curve of human and social problems which change created.

As the key on the model shows, one of the two lines represents the exponential change rate of recent years. Without any pretense of

⁷ Preserved from conversations with John Platt, at the University of Michigan on November 12, 1971. Also cf. bibliographic reference to his paper, "What We Must Do," Science 166:1115-1121, November 23, 1971.

**FIGURE 2. THE HYPOTHECATED PATHS SHOWING CHANGE
RATES AND CONCOMITANT SOCIAL PROBLEMS**



mathematical precision it is intended to symbolize the fact that the speed of communication has increased approximately 10^7 (10 millionfold) since Queen Victoria was a girl, that speed of travel has increased 10^2 or a hundred times in the same interval, and that data processing has speeded up 10^6 or about a million times since 1935. (Cf. Fig. 4 for additional graphic data.)

The second line suggests that mankind's problems likewise have proliferated and that some time in the mid-1960's they became more numerous even than the changes that bred them. Figure 3, hopefully reflects a serendipitous future development--the coming top-off of the impact of change on man and the consequent taper-off of human-kind's social problems as the shock waves of change become less able to jar us.

As the change models are meant to imply, we now have weapons too deadly for a sane head of state to use. Satellites have given us virtually instantaneous world-wide audiovisual communication and travel in supersonic transports is so fast that after a London to Montreal flight in two hours on the Concorde, one's body almost needs to wait for his soul to catch up. Furthermore, the leap from coal to nuclear power has given us a thousandfold boost in energy resources. In short, the impact of change on society between 1940 and 1970 seems more than likely to decrease. It is important to reiterate that it is the impact that should decline. It does not necessarily follow that the rate of change will top off in the 1970's or '80's. Computerized data processing inevitably will become more

**FIGURE 3. POSSIBLE TOP-OFF IN THE CHANGE RATES
AND CONCOMITANT SOCIAL PROBLEMS: IMPACT OF
FUTURE SHOCK**

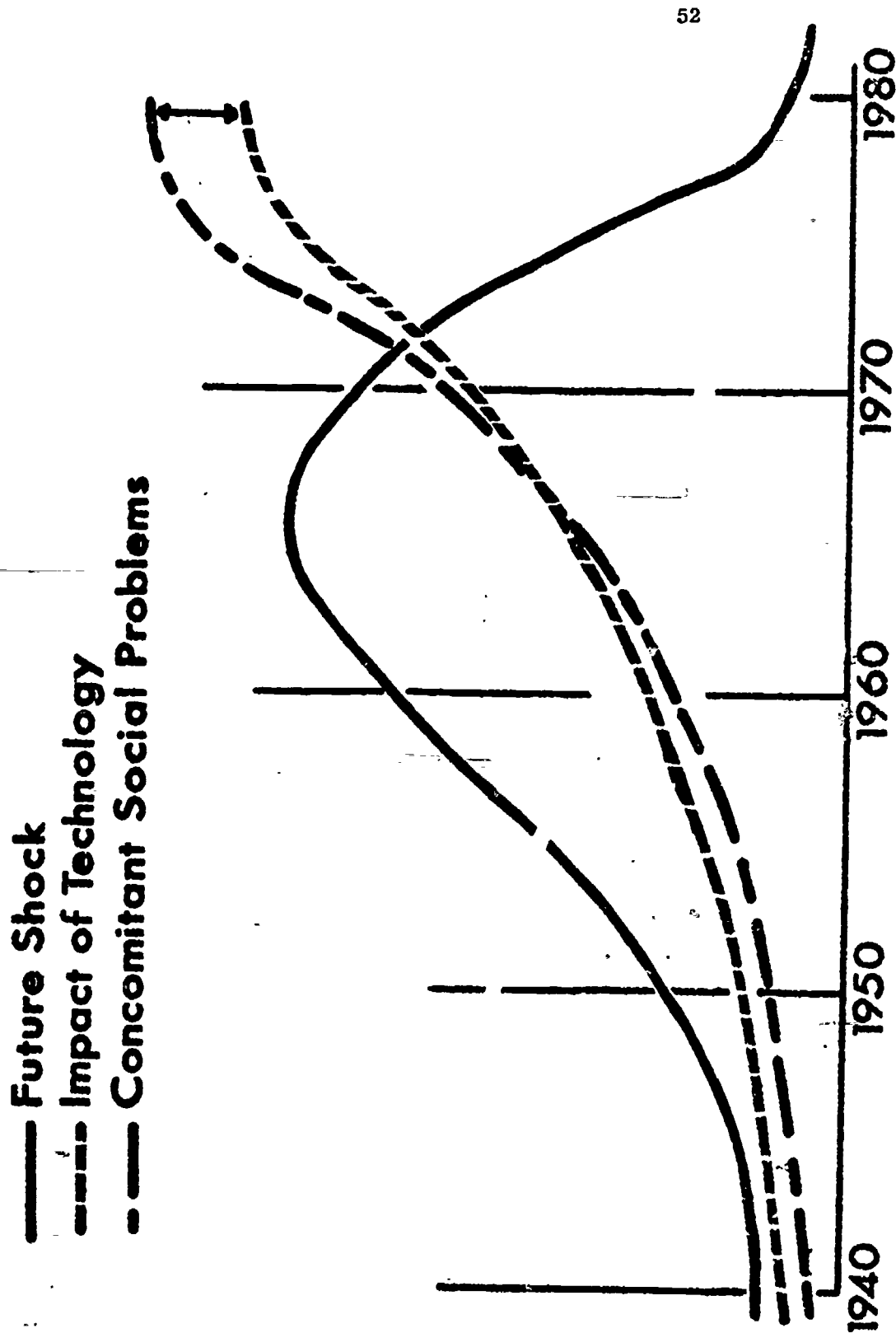
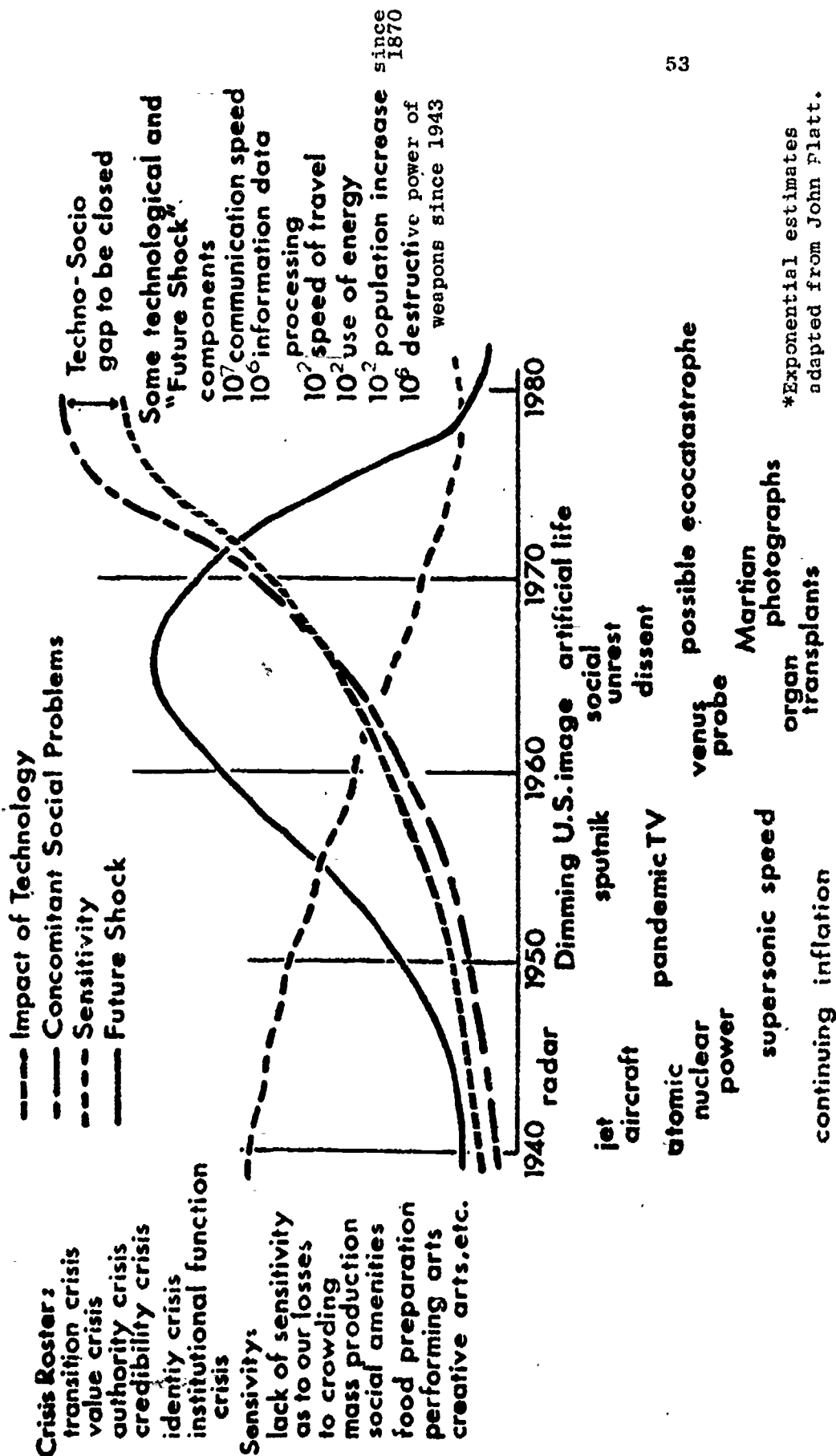


FIGURE 4. COMPOSITE OF FIGURES 2 and 3 WITH "SENSITIVITY INDEX" ADDED



MODEL ILLUSTRATING ANTICIPATED TOP-OFF IN THE
IMPACT OF TECHNOLOGICAL AND SOCIAL CHANGE

rapid and more efficient, the federal income tax seine become more tightly woven, the use of credit cards more widespread, and the speed with which plane reservations are verified even less error-prone. But these further changes are not as likely to enter and to mediate our way of life in the last 10 or 15 years to the same degree or to the same extent that they influenced us between 1955 or 1960 and 1970. Toffler's "future shock" too can be expected to diminish as suggested by the bell-shaped line added in Figure 3. World-wide communication by satellite can't be any faster than instantaneous! Nor is there any new wallop in "super-overkill" weaponry when present "overkill" weapons are so deadly that the U.S. recently felt compelled to dispose of its biological warfare arsenal.

So--say some thoughtful and persuasive policy researchers--we can expect to have a respite from sociotechnical change during which to consolidate our gains in environment control while we try to find better ways to heal the social wounds and sore spots created by the portentous changes and dislocations of 1940-1970.

Figure 4 is a composite of the first three charts and adds one other dimension shown in the descending line drawn to denote possible loss of sensitivity on the part of persons in the U.S. It is intended to illustrate the point that mass production has diminished our sensitivities to many amenities which were once enjoyed, at least by people with middle class and upper class incomes in years gone by, when such persons could purchase beautifully hand-crafted and individualized products: furniture, shoes, carefully prepared foods and so on.

SUMMARY

The present chapter introduced the field of policy decision research and futures studies. The findings indicate that a wide variety of individuals and agencies are at work in these fields. Resources vary greatly and purposes may differ from place to place. However, there is an almost uniform belief that man has "probable alternative futures" before him and that from among them he can choose wisely and successfully if he learns to use his wits more carefully and his technology less naively.

Despite minor differences, most policy decision researchers use similar tools and tend to share similar concerns with regard to the problems of the world's peoples. While they recognize the threat of Orwellian dystopias, they are optimistic in their concepts of better futures and in their respect for humankind's ability to achieve them.

Emphasis now switches to Section III of the report, an examination of futures research with a bearing on education.

III. FUTURE PLANNING WITH A BEARING ON U.S. EDUCATION

As indicated in the Foreword, the present section reviews the ideas of specialists working in futures research centers; men and women who are concerned with policy decisions that should prove to have a direct or at least an oblique relationship to U.S. education.

The organization of the material in the following pages is directly based on 20 open-ended questions which were addressed to individual researchers and to the staff members of larger centers that were visited.¹

WHAT ARE THE MAJOR PURPOSES OF FUTURES RESEARCH?

Whatever the nature of their varied clients--clients ranging from individuals to corporations and governments--futures research center teams and independent workers alike said that they were concerned with the analysis of crucial issues with a direct bearing on subsequent policy decisions.² Representative statements as to their functions are as follows:

"We hope to assist the public and policy planners to develop a capacity to understand more clearly possible

¹The instrument was designed to be helpful as a guide to discussion in any of the varied visitations made during the study, but was more suited to two- or three-day sessions, say at an EPRC, than to individual sessions with scientists who were working independently.

²"Policy research" is a term that may be replacing "futures research." Its increasing popularity reflects (1) a growing interest in short range decisions as well as in long-range "Year 2000" type inquiries, and (2) at least some feeling that the serious discipline of futures research wants to dissociate itself from anything with a label that critics can deride as science fiction.

futures; to relate the present to the future and the future to the present." (Warren Ziegler, EPRC, Syracuse)

"Development, testing and dissemination of tools and information to help the U.S. formal educational system in its efforts to prepare citizens for a meaningful future life." (Christopher Dede, University of Massachusetts)

"Our Center exists because science has been badly used. We are seeking to fathom why this is so, especially at the moment with regard to resistance to long-range social change." (Donald Michael, Institute for Social Research, University of Michigan)

"We exist for purposes of conducting contract research on all forms of futures, including educational futures and to help base public policy on research regarding possible developments in the years ahead." (Anthony Wiener, The Hudson Institute)

REPRESENTATIVE PAST VENTURES

Because of the range and variety of past ventures in which the Educational Policy Research Centers, RAND Corporation, The Futures Group, The Institute for the Future, and other centers have engaged, it is impossible without consuming dozens of pages to enumerate and describe more than a few examples of the important undertakings which were inventoried. Since a complete inventory is not feasible here, the reader seeking more information is referred to representative publications in the bibliography with which the report concludes. Some representative examples of futures research activities appear below.

Institute for the Future. In 1971 the Institute for the Future published a useful descriptive document, Futures Research As an Aid to Government Planning in Canada: Four Workshop Demonstrations. The 139-page report describes the outcomes of workshops which demonstrated a number of techniques based on futures research and explored their

utility as a means of more effectively pursuing functions of a governmental body.

University of Massachusetts: Program for the Study of the Future in Education. While serving as Program Coordinator of this center in Amherst, Billy Rojas compiled a valuable inventory of futures programs throughout the United States. Concentrating on the college level, he found dozens of examples of courses which directly and indirectly dealt with futuristics.

Educational Policy Research Center--Stanford Research Institute. Last year Willis Harmon and his associates produced a carefully designed document, Alternative Futures and Educational Policy, which provides a basis for discussion by groups or agencies concerned with educational change, including curriculum change. Another exemplar document from the same center and reflecting some of its important past ventures is Forces for the Societal Transformation in the United States 1950-2000 (Volume I, 1971).

Educational Policy Research Center--Syracuse University Research Corporation. Like its sister center at Stanford, the EPRC at Syracuse gives important evidence of past ventures which are reflected in the publication of the Center. Excellent illustrations of these publications are Essential Reading for the Future of Education (Revised) and the periodical, Notes on the Future of Education, published every two months, which because of its focus reflects EPRC projects.

RAND Corporation. The document, A Bibliography of Selected RAND Publications, (September, 1971) provides a useful overview of activities, many of which touched education, that had been completed

at RAND. Typical among them are reports treating the development and the application of the Delphi technique, several recent studies of performance contracting, an investigation of educational changes proposed to improve the primary schools of Colombia, a discussion of the use of PPBS (Planning-Programming-Budgeting System) in higher education, the effectiveness of color television in instruction, and a multivariant analysis of schools and their educational policies.

An intriguing, recently completed (1971) RAND study was done by Norman C. Dalkey and Daniel L. Rourke (see bibliography). Entitled Experimental Assessment of Delphi Procedures with Group Value Judgments, the inquiry, conducted with students from the University of California at Los Angeles, explored their ideas regarding the good life and related characteristics of effectiveness in higher education. One possible portent of the future was an apparent neo-conservatism expressed by the students as they identified what they sought to obtain from their education. Among the "old fashioned virtues" to which these students gave the highest "relative importance" ratings were (1) the ability to learn, learning to learn; (2) reasoning abilities, ability to think; (3) critical ability, questioning, the development of a critical attitude; (4) synthesizing ability, a sense of organic relationship.³

³The presence of this report was reflected almost two years later in U. S. and British magazines which featured articles on growing campus conservatism. Cf. Esquire magazine, September, 1972, pp. 71-85; 156. Also cf. "Barometer," in Harper's Bazaar and Queen, July, 1972, p. 57.

Systems Development Corporation. Representative of a recent education-oriented SDC venture was A New School for the Cities. Financed by the Ford Foundation, this 182 page document presents a provocative overview of program, operational, financial, and other futures which were deemed desirable for a new, improved kind of urban school. It is essentially a plan, not a study, and was based on the assumption that the school it anticipated could and would be built.

The Hudson Institute. According to Frank Ambruster, the Institute was studying such education-related topics as the apparent decline in the willingness of taxpayers to support education and the changing life styles of various American "cohorts." Extensive descriptions are given of the Institute's other activities in Paul Dickson's recent publication, Think Tanks. Also, the 1967 publication by Kahn and Wiener, The Year 2000, A Framework for Speculation, is well-known.

It should be borne in mind that the brief excerpts above patently are examples rather than comprehensive summaries. The writer accumulated over 100 documents summarizing past ventures of the Centers.

CURRENT AND FORTHCOMING PROJECTS

Once again, to avoid tedium and because of space limitations, the report deals with some interesting illustrations of current and pending futures research rather than an extensive inventory.

The Futures Group. Formed less than a year ago in the late winter of 1971, this organization has moved forward on the assumption that a growing number of corporations, government agencies, and

similar institutions are beginning to build their plans around policy and futures research and to develop their own futures staffs. It thus became the purpose of The Futures Group to perform policy research for those people presently lacking futures personnel or who wish to supplement their policy decision procedures with The Futures Group's services. The Futures Group predominantly has been serving business clients and studying their possible alternative futures as they relate to labor, energy and power, institutional change, consumption, value redevelopment, research planning, economic projects, and so on. An intriguing new development is a Futures Group service known as SCOUT. This is an information retrieval system and, in approximately the first six months, over 10,000 input-items bearing on futures had been computerized so as to permit the Group to provide at least some evaluative information on virtually any topic, including educational futures. Included in the service are not only a computer print-out bibliography of a comprehensive nature, but an individually prepared summary of developments affecting clients' possible futures.

RAND Corporation. This corporation, one of the pioneers in futures research and a large well-established institution, according to the educational director, Dr. Pincus, had a large number of educationally oriented projects underway. He noted that RAND, as of November, 1971, was engaged on a Delphic study of education, an analysis of population growth and its bearing on elementary and secondary educational futures, a study of educational management planning, an analysis of ways of increasing the effectiveness of

educational management (for example, by computer budgeting), an inquiry into evaluation and accounting practices, including one of the first studies of performance contracting in United States schools, the impact of new technologies (computers, cable TV, etc.) on educational institutions and on the learner, a study of current educational models, and an investigation of the national fiscal implications of the Serrano-Priest decision, which at the time had just been handed down, regarding school finance in California.

Educational Policy Research Center--Syracuse. The writer spent considerable time at Syracuse, conferring virtually on a one-to-one basis, with 13 staff members. The current projects described by these men and women covered a considerable range of topics among which were: post-secondary education, the definition of "equity" as distinguished from "equality" in education, economic phenomena related to schools, the development of educational facilities in a "new city" project, possibilities in lifelong education, re-examination of educational goals, cooperative study with the Organization for Economic Coordination and Development (OECD) in Paris, and a critical analysis of possible flaws in quadratic equations used in cross-impact analyses of potentially interactive future trends among given variables.

(Also cf. Chapter V.)

Educational Policy Research Center--Stanford Research Institute.

As at the eastern EPRC, the writer invested considerable time in visiting the Research Institute at Stanford supported by the USOE. Perhaps through less effective deployment of his time, the investigator

met with a smaller number of staff members at the SRI, but also spent more time with those persons who were interviewed.

A current significant project underway here continues to be an analytic computer-based projection of alternative futures and their educational bearings. These are centered around a "futures tree" which provides a means of delineating possible futures as of the year 2000. Originally described by Russell Rhyne in Projecting Whole-Body Futures Patterns, the Field Anomaly Relaxation (FAR) method is continually undergoing refinement. Presumably, an important new facet in the SRI's activities will be the development of recommendations regarding educational practices and policies which promise to support U.S. progress toward the half dozen or so tenable futures out of 40 which have been explored by Dr. Harmon and his associates. (Also cf. Chapter V.)

Office for Applied Social Science and the Future, University of Minnesota. As of the autumn of 1971 the Office for Applied Social Science and the Future was -- even among futurists -- the least-known of policies research centers. Operated by Arthur M. Harkins (with Richard G. Woods as Associate Director) it exists primarily to add to the growth of components focusing upon alternative futures within the north-central region of the U.S. It places heavy emphasis on the development and improvement of graduate and undergraduate courses pertaining to alternative futures which are now being packaged into degree programs. Another interesting aspect of the Office's work is activities conducted in conjunction with large corporations which are re-evaluating their roles in American society.

Since this University of Minnesota project has thus far (1971-1972) shunned outside foundation and Federal funds, its current and projected activities are largely centered in the State of Minnesota or the immediate vicinity. Current programs are described by the Director as follows:

. . . undergraduate and graduate programs in alternating futures at the University of Minnesota; contract work on the Wide-band Community Information System at Jonathon, Minnesota; upcoming contract work with the U.S. Army Corps of Engineers on alternative future uses of water resources; a contract with the Northern States Power Corporation in an extensive, highly sophisticated management training-adult education program on alternative futures for a population of NSP personnel; an upcoming contract with the Hallmark Card Corporation of Kansas City, Missouri that will be a variation on the NSP management training-adult education program; an upcoming relationship with two Kansas City area universities that will culminate in a Spring, 1972 three-day seminar on alternative futures for medical service deliveries.

Exploration of corporate, municipal, and miscellaneous fields with possible futures impact. In the process of conducting the present inquiry the writer decided to include visits to a major corporation which was in the process of influencing the future by operating a new educational project. To serve this purpose, four days were spent with officers of the Singer Corporation and in visitations to determine the status of rapidly growing "Singer Learning Centers" for young children, ages 2 to 8, which the Corporation is opening.

In discussion with Singer executives, it was learned that during the current year, 1971-1972, the Corporation will be operating learning centers for such major corporations as American Telegraph

and Telephone, Philip Morris, and RCA. In addition, during the autumn and spring one of the Corporation officials explored with a large American city ways in which the Corporation might operate its early childhood and primary programs not on a performance basis but on a managerial one in which community contracted with the Corporation to educate children according to certain educational specifications. By July, 1972, ground had been broken for two schools for three-to-five-year old children in the Indianapolis area which, when opened in 1973, would operate outside of the public school structure.

During this four-day phase of the inquiry, the investigator visited four of the ten area learning centers now operated in the Pittsburgh (Turtle Creek) area by the Corporation. These were funded through Model City monies. Clearly, such ventures in the preparation of young children are an important and not yet thoroughly explored component of alternative educational futures. One point does seem clear. Leadership in education (as in nature) abhors a vacuum and the future holds the prospect of the U.S. corporate community pioneering in providing services that the educational community, whatever the reason may be, is not now providing.

Further to explore the influence on the future of non-future planning agencies, the investigator also met with (1) Erik Jonsson, former mayor of Dallas and a leader in the Goals for Dallas Plan, (2) a randomly chosen group of students at an Eastern college, and (3) persons from two professional organizations concerned with education. The first conference with Mr. Jonsson clearly pointed out how one person could become an important ingredient or catalyst

in the process of focusing effort on socially desirable and educationally needed change, especially when backstopped by adequate funds and civic vigor.

Conversely, one of the troublesome outcomes of conferences with students and teachers was the conclusion that during the academic year 1971-1972, most of them were uninformed with respect to the concept of futures research and totally unaware of the concept of methodical procedures in educational innovation. Among students at an Eastern college for women, specifically a group of 60 seniors, any ideas or thought about studying alternative futures as a way of improving tomorrow was limited in the extreme. The students' "futures" reading, for example, was confined to three out of the 60 who had read Alvin Toffler's, Future Shock.

Some generalizations to be drawn from these several experiences were, first, that many things likely to have a catalytic influence on the status of future changes were transpiring outside the confines of futures and policy research agencies per se. Second, there probably is a need for the USOE to have some means of keeping advised of corporate and municipal developments which involve education.⁴ Basic policy decisions are likely to be needed here. Third, with a few exceptions, such as the University of Minnesota Program, futures study is not yet strongly encouraged by university administrations, although dozens of professors are teaching isolated courses in this field.

⁴A case in point: The writer learned during the study that a corporation and a major Southern municipal government were negotiating the construction and operation of schools for children in the primary grades outside the structure and jurisdiction of the local school system.

PUBLICATIONS FROM FUTURES PLANNING CENTERS
RELATED TO EDUCATION

Interviews conducted during the survey documented the extensive amount of literature which has become available on futures research. Even if one limits himself to the field of education, there is far more available than easily can be read and it is accumulating more and more rapidly. Perhaps the best means of dealing with available publications is to refer to the excellent bibliographies prepared by Dr. Michael Marien of the EPRC at Syracuse. Carefully annotated and as comprehensive as care and thought could make it, this bibliographic material most recently revised in 1971 provided a comprehensive answer to this part of the questionnaire except for specialized and extremely recent material accumulated during the investigation. Key items appear in the bibliography.

No more is done to interpret this material since any presentation or summary would be a poor duplicate of Marien's work at Syracuse.

THE DISTINCTION BETWEEN CONVENTIONAL PLANNING
AND FUTURES PLANNING

Opinions varied sharply as to precisely how conventional planning and futures planning differed but there was no lack of agreement that they did differ. In general, most persons accepted the premise that futures planning stressed alternative possibilities which could be brought about through the deployment of time, energy, and money (TEM units) as pointed out in the preceding section of the report. Also there was a considerable feeling that

sound futures planning was more value-oriented than ordinary planning.

In other words, the futures planner looked not merely at the outcomes of a choice as it affected the purposes of an organization or agency making such a choice but at the wide and close effects which might conceivably be involved outside the purposes, structures, or products of such an agency. As one man put it, "By the very nature of futures planning, genuine alternatives rather than mere variations of inflexible themes are considered." Other points made with respect to futures planning--as distinguished from conventional planning--included the following:

- (1) It should open up more possibilities;
- (2) It involves looking at possible developments that are not to be found in statistical analyses per se;
- (3) It is generally done on a long-range basis;
- (4) It is not so much concerned with mere reform of the past but with depicting probabilistic environments which could be totally novel;
- (5) It should be related to what you are willing to spend now in order to have a desired future;
- (6) It is distinct from conventional planning which is likely to be a projection of past relevancies into the future rather than the use of the future to communicate to the present;
- (7) It tends to stress the concept of "intervention" in the achievement of desired goals.

THE DILEMMA OF "MASS PARTICIPATION" VS.
"EXPERTISE" IN FUTURES RESEARCH

More often than in any other question asked, persons engaged in futures planning were uncertain as to how one best might reconcile mass participation with the need for expert opinion and research input from an expert élite. Among 40 or 50 persons who reacted to the question, there was no one who failed to recognize the importance of the dilemma. It also was widely recognized, in the interests of democracy, that persons who were going to be expected to abide by decisions ought to have a voice in making such decisions--or at least be reasonably informed with respect to the nature of problems and of alternative solutions.

At the same time futurists saw the dilemma created by splintered opinions in a pluralistic society. Also clearly seen were the problems of: (1) persons motivated on a self-interest basis, (2) the difficulty of dealing with demagogues who were concerned more with their personal welfare, and (3) the challenge of working with persons who did not have the requisite information for making a thoughtful decisions.

At the same time, there were a number of efforts made by various persons interrogated to answer the question. To illustrate, while conceding that broad-based participation was not always feasible, Theodore J. Gordon of The Futures Group felt that the selection of alternative futures, even if necessarily made by an élite or special group, should be based upon egalitarian values.

Thomas Green of the EPRC, Syracuse, commented that one way of coping with broad participation was to have many persons share in the identification of goals. He went on to say that experts should be sure to recognize that the process of determining mutual goals and values was an essential prerequisite in reaching reasoned decisions.

A group of doctoral students working in the University of Massachusetts Center for the Study of Educational Futures advised the writer that they felt expertise was needed in order to accumulate unbiased open-ended information and to eventuate in value-based decisions and recommendations. They also felt that techniques which would improve intelligent participation needed to be developed.

Suggestions from the EPRC at the Stanford Research Institute included the use of a wide range of experts with diverse opinions to be reconciled through discussion in the hope that through this diversity many "mass participation viewpoints" would be represented. Some members of the Stanford Center also suggested that some type of public forum made up of representatives from perhaps 50 groups in a pluralistic society could be utilized to identify general goals toward which progress could be made through the guidance of experts. Dr. O. W. Markley also called attention to the fact that historical analogies might be used. In other words, one might ask when making present decisions whether or not there was information from the past that indicated whether or not a proposed line of action was feasible.

Dr. Olaf Helmer at the Institute for the Future, West Branch, stressed the seriousness of the participation-elitist dilemma and cautioned against misconstruing the need for participation to such an extent that it became ludicrous. He said frankly that the world was too complicated to run without highly centralized governments and complicated machinery. At the same time, he emphasized the need for decentralized control. In other words, he seems to feel that merit needed to be associated with leadership decisions and that leaders should not have arbitrary power merely because of their positions or because of their access to privileged information--except perhaps in extraordinary situations clearly related, say, to national security.

Some of the officials at RAND Corporation forthrightly indicated that they felt that many recent ventures in community control had been a bad mistake and that further efforts at mass participation needed to be approached with much more caution and forethought. Dr. Wyler felt that perhaps policy making ought to reside in the merit of ideas rather than in rank or status and that we needed to develop better machinery to permit the improved interchange of ideas.

Personnel at the University of Minnesota suggested a "noetic"⁵ approach. Their exact statement was as follows:

⁵ "Noetic" means of, pertaining to, originating in, or apprehended by the intellect, as used here.

This approach suggests an open planning process, involving all interested or potentially interested persons and groups. The noetic process also communicates all planning information, planned strategies, tactics, etc. to the outside community for additional feedback. Choice of the "mix" between professional planners and others is mediated by the conditions of the various states-of-the-art involved, the nature of the world-views of those involved, the constraints of particular situations and the feedback from potentially affected community persons.

The most comprehensive set of suggestions with regard to means of avoiding the participation-expertise dilemma was offered by Frank Ambruster of The Hudson Institute. He suggested the following ideas and caveats:

- (1) Listen to more people than those with whom we usually associate and listen to different people from those in our particular in-group.
- (2) Avoid talking predominantly with persons in one occupational group such as professors, politicians, physicians, etc.
- (3) Try to insure that experts directly deal with "real world" problems; solution-oriented problems with which masses of people can identify.
- (4) Use well-informed consultants; be sure that the consultants who are well-informed outside the periphery of their specialty.
- (5) Recognize that what we once referred to as an "elite" is now becoming more polygot and that if we make the effort we very possibly can find a growing number of experts from minority, ethnic, and other groups. (As this occurs, caution must be exercised to insure that persons from various segments of our pluralistic society continue to emphasize with the group from whose loins they have sprung.)

In fine, some of the effectiveness of futures research and policy decisions over the next decade appeared to depend upon a further exercise of ingenuity in finding the needed ways of coping.

wisely with mass participation and its sub-problems: pluralism, self-interest, limited information, or prejudices.

WHAT VALUE BASES OR GOAL IMAGES ARE NEEDED IN FUTURES PLANNING?

Virtually without exception, persons working in futures studies had distinct goals which they readily identified. Some typical objectives were as follows:

- (1) To work closely with policy planners so that they become future-oriented and no longer need guidance in futures research theory from consultants;
- (2) To promote an awareness of the future and the consequences of decisions with a bearing on the futures such as whether or not to fund the development of a United States supersonic transport;
- (3) To provide unbiased open-ended alternatives goals and useful information pertinent to survival;⁶
- (4) According to Marvin Adelson, goals should encourage diversity and openness, experimentation, and the conviction that there is not necessarily any one best way of reaching a given goal and that "best" ways vary from time to time, from place to place, and from group to group.
- (5) Donald Michael, at the University of Michigan, appeared to favor goals built around the Third Force Psychology, sometimes called Humanistic Psychology, associated with the writings of the late Abraham H. Maslow and others. Michael also emphasized the need for us to develop new concepts as to the nature of man as we sought to clarify our goal images. He also disagreed with the Prometheus concepts of Gerald Feinberg whose ideas

⁶One of the eloquent statements relevant to this point is Willis H. Harman's Alternative Futures and Educational Policy (see bibliography).

he feels tend to exploit the universe and to separate us from the realities of the world that is emerging.⁷

INDIVIDUAL FUTURISTS' GOAL IMAGES

In general, respondents' personal goal images research coincided with the broad policy research goals listed immediately above.

HOW EFFECTIVELY HAS INFORMATION REGARDING YOUR FUTURES RESEARCH BEEN DISSEMINATED?

Two trends characterized the dissemination of futures research information. First, there seemed to be excellent dissemination among futurists with respect to the work and contemplated projects of their peers and colleagues in various universities and agencies. Only work underway at the University of Minnesota Office for Applied Social Science and certain work going on at RAND Corporation was not generally familiar to survey respondents.

Second, general public knowledge of futures research as revealed by interviews with students and persons in professional educational groups was negligible. Note had already been taken of this point.

Particularly with respect to the diversified activities of the EPRC at Syracuse and at Stanford Research Institute, steps might be taken by the USOE to increase the awareness of profes-

⁷ In fairness, it must be admitted that some futurists expressed considerable admiration for Dr. Feinberg's The Prometheus Project, among them Theodore Gordon, who felt that Feinberg had expressed many of his own sentiments. Anthony J. Wiener said that he had been favorably impressed by The Prometheus Project concepts (see Feinberg reference in bibliography).

signal educators as to EPRC activities. This matter is discussed further in Chapter V.

WHAT IS THE INTERACTION LEVEL AMONG FUTURES RESEARCH CENTERS?

When asked this question, the replies from persons interviewed were unusually succinct. The following replies are excerpted from the survey questionnaire: "sporadic," "parapetetic," "we have had some close relationships with the OECD," "hopeful," "information exchange rather than close contact," "virtually none," "deliberate but mostly with individual contacts and other locations," "very little and informal," and "we anticipate working more closely with others as our program develops..

Since persons in futures research are rather well-informed about what others are doing, one is led to conclude that friendship patterns and personal contacts in a tightly-knit field constitute the musculage that holds the U.S. futures network together despite the dearth of methodical information exchange. The writer also believes that a good deal of credit should be given to Edward Cornish, President of The World Future Society and editor of THE FUTURIST in which much relevant news is disseminated. Overseas similar recognition should be directed toward FUTURES, edited by Guy F. Streatfeild. This is a quarterly magazine which has a substantial international audience which is doubtless encouraged by its moderate cost.

WHAT ARE SOME SHORT-RANGE (TO 1975) AND LONG-RANGE (TO 1980)
EMERGENT TRENDS AND PROBLEMS AFFECTING SOCIETY IN GENERAL
AND EDUCATION IN PARTICULAR WHICH YOU WOULD IDENTIFY?

The reader may raise an eyebrow at the narrow limits of the writer's vision when he refers to "short-range" in a 1973-1975 context and to "long-range" in a context of 1976-1985. These nearby dates deliberately were chosen because of the need to emphasize things that might be done very soon in U.S. education with respect to alternative educational futures.

In any case, "long-range" and "short-range" problems bearing on education became impossible to separate in the course of survey interviews. It also was virtually impossible to chart precisely educational problems upon which immediate attacks (before 1975) and long-range approaches (before 1980) might be made. At the same time, in the section dealing with recommendations in Chapter I, some priorities already have been suggested.

Problems and trends in society as a whole. One major problem-trend which was mentioned by virtually everyone was the so-called values crisis; the decline of "accepted" behavior and "right" answers to questions involving home, church, school, government, sex, child rearing, drugs, and so on. Among other wide-ranging problems which were mentioned more than once by persons interviewed were the following:

- (1) The need for some source of values to take the place of the discipline long enforced by the great religions of the earth.
- (2) The need to re-assess carefully the extent to which the biosphere could continue to be exploited for the production of consumer goods at a rate which

recent decades has expanded alarmingly every year.

- (3) The problem of materialistic values which have been fostered by the many products of technology and which have made yesterday's luxuries become today's "necessities."
- (4) Future difficulties related to Americans' dependence upon the motor car and culture built around the automobile: a culture fostering such phenomena as drive-in movies, automobile vacations, casual travel over long distances on a weekend, the development of shopping centers which are virtually inaccessible or useless to persons without automobiles, new patterns of sexual behavior, the concomitant decline of efficient common carriers such as the streetcar.
- (5) The have and have-not problem which resides in the split between those above and below the median in income in the U.S.: a chasm separating the well-to-do at one extreme from the very poor at the other.
- (6) The dilemma of the future posed by the fact that with 6 percent of the population of the world, the U.S. has consumed approximately 65 percent of the world's annual production of raw materials.⁸
- (7) Difficulties inherent in the proliferation of knowledge and the information overload which it is creating.
- (8) The absence on the part of many children and youth of a future-focused role image without which they cannot envision themselves in a satisfying occupational and social position as they move toward adult maturity.
- (9) The continued threat of mass destruction and its accompanying insecurity.
- (10) The individual's loss of identity and the danger of dehumanization, lack of respect for due process and the tendency to question the legitimacy of duly constituted authority.
- (11) A lack of sensitivity to good craftsmanship, carefully prepared food, thoughtful interpersonal relationships, and other amenities associated with the good life.

⁸ In *Only One Earth*, page 119, Ward & Dubos say that an American baby, in a lifetime of 65 years " . . . is going to run through the biosphere's available supplies at least 500 times faster than an Indian baby " at present consumption rates.

- (12) Particularly in the inner city, an almost medieval "Robber Baron" climate caused by lawlessness, disorder, disrespect for human rights, and the tyranny exercised over ghetto dwellers by individuals and groups in the same neighborhood.
- (13) An uncertain economic future with the possibility of a 1930-type depression in the coming decade.
- (14) Inadequate plans for worldwide control of pollution caused by technology, by increased population, and by irresponsible increases in the nature of both production and consumption.⁹

Problems and trends in U. S. education. A number of educational problems were identified by futurists. But again, it was difficult to sort these into the categories of short-range and long-range problems. A sampling of problems and trends follows:

- (1) Since schools tend to reflect the problems of society, one of the great difficulties confronting education is the lack of clear goals and clearly delineated values on the part of U.S. society. In the absence of a clear cut image in our culture as to what the educated man and woman should be, the schools are at a serious disadvantage.
- (2) There seems to be a threefold trend with respect to what constitutes "good" educational practice. One of these is conventional or didactic, an emphasis upon the cultural heritage, educational fundamentals and, frequently, teaching by telling. The second is inquiry-oriented or heuristic and received a substantial push during the latter 1950's and early 1960's. The structured inquiry approach, while widely advocated, probably is not as prevalent as the didactic approach. It was contended that one of education's problems is reconciling these two trends. A third somewhat difficult to define trend in U.S. education is what might be called a humanistic or self-actualizing approach, one of which emphasizes the feelings, the development of a wholesome self-concept, and perhaps even a future-focused role image with which the individual can learn to identify as he grows older.

⁹ Chapter IX in Barry Commoner's book, The Closing Circle, provides a clear explanation of the way in which technological changes of the past 20 years have complicated U.S. problems with regard to pollution.

- (3) There appears to be at least a nascent trend toward postponing the age of university entrance and perhaps even of questioning the desirability of universalizing a college education as it is now construed with its divisions into formal schools and colleges and with prescribed entrance and exit requirements.
- (4) At least some futurists feel that there may be a growing conservatism on the part of students with respect to what they consider education should provide. This conservatism (at least at the level of higher education) would appear to take the form of greater student desire for the didactic rather than the heuristic or humanistic emphases mentioned above.
- (5) Despite the lack of hard data, virtually all futurists feel that education should begin at a very early age, no later than at 2 or 3. There also is strong support for extending educational experience into old age. This is sometimes coupled with the feeling that the rigidity of the educational structure should be relaxed and that compulsory attendance might well be lowered to 12 or 14 years of age, if, and this is a big if, arrangements can be made for young learners to move into the world of work and return to educational experiences periodically without any stigma, red tape, or loss of momentum. (This implies infinite exit and re-entry privileges, on a planned basis, out of and back into the schools at any age.) This point is elaborated in Chapter IV.
- (6) It is generally felt that there will be an increasing trend toward the use of the computer for educational purposes, at least at the university level. An accompanying problem, however, is the matter of what consensus as to content can be reached so that it becomes financially feasible to market both the computers and the software programs designed for them.
- (7) Although the idea is not an entirely recent one, a number of futurists tend to feel that there will be a sharp increase in the use of home study materials by persons of all ages. Some foresee a blurring of the lines between the home and the school as a place in which methodical instruction occurs. Presumably, as software for electronic equipment appears in greater abundance, the distinction between schools and alternative forms of schooling will increase.

- (8) While no futurist saw a need for us to anticipate bidding farewell to schools as we have known them, many felt that there would be distinct increases in the number of options as to how one obtained an education. Far less emphasis upon credentials and certification (except in certain professions) was seen, and a widening age span in various groups of students in what are now the grades of elementary and secondary schools was anticipated. This trend is reminiscent of some forms of education in the Middle Ages where one's ability to cope with Latin determined admissibility to institutions such as the University of Paris in Abelard's day. During the 12th and 13th centuries, one found pre-adolescents, adolescents, persons in their 20's, and occasionally individuals even older sharing the same hard benches at Cambridge, Oxford, Padua, Cordoba, or Verona.
- (9) Markedly different deployment of teachers and new interpretations of entrance ages and the length of the school year were identified and generally endorsed as desirable trends by persons in the policy development field. Again, this is dealt with in more detail in the "Recommendations" section. The points numbered above assume added interest when one takes into account that they are trends or problems identified by persons who, with rare exceptions, were not professional educators. Rather, most of the respondents were mathematicians, psychologists, chemists, physicists, biologists, and so on.

WHAT EDUCATIONAL ISSUES OR PROBLEMS ARE LIKELY
TO BE PREDICTABLE, PROJECTABLE, AND
RESPONSIVE TO FUTURES PLANNING?

Futures research personnel usually felt that the word "forecastable" should be substituted for "predictable." One can forecast from the data he has at hand. Prediction, however, has a flavor of foretelling or prophecy which your futurist finds unpalatable.

Forecastable Events. Some opinion held that the economic base of education could be forecast, at least on a short-range basis,

and that the "cool-down" on college campuses actually had been forecast. Other specialists emphasized the point that while a forthcoming problem often could be forecast, its exact form could not be foretold. It was also pointed out that what the governmental, industrial, educational and other agencies intended the future to be was likely to have a bearing on what actually happened.¹⁰ (See material below dealing with the self-fulfilling prophecy.)

One behavioral scientist contended that an important forecast of the moment was that schools might very well become increasingly incapable of performing their present functions and assuming new ones in the absence of badly needed social decisions regarding what the culture expected of its schools.

Projectable events. Here most futurists limited themselves to such matter of fact items as enrollment studies based upon demographic data, relationships between the Gross National Product and school expenditures and, at least until recently, likely trends in births and population shifts.

What dimensions of education are responsive to futures planning. Despite the conservatism of futurists with respect to predictions, forecasts, and projections, virtually all respondents combined in agreeing that much of U.S. education was or could be responsive

¹⁰ Some examples of ideas which have influenced education include the use of paraprofessionals, the voucher plan, performance contracts, and court decisions such as Serrano-Priest decision in California.

to futures planning! Emphasis here was placed upon the fact that we could identify alternative educational futures and examine their pluralistic qualities and that we also could identify their relationship to the general welfare, ascertain our ability to finance them, and vary what was offered in terms of the wishes and aspirations of most segments of a pluralistic society. The role of the federal government in shaping the future through its choices in deploying tax monies was mentioned repeatedly.

HOW MAY EDUCATION BE INFLUENCED BY EMERGING
TECHNOFUTURES, SOCIOFUTURES, BIOFUTURES,
AND HUMAN OR "IMAGE OF MAN" FUTURES?¹¹

The compilation of suitable specific data regarding probabilistic alternative technofutures, sociofutures, biofutures, and human futures proved to be an impossible task in the short span of the study. The mass of material was too much to cope with even during a three-day visit to an Educational Policy Research Center.

At the same time, conversation strongly suggested that there was an apparent opportunity for the USOE to exercise leadership in the months ahead by convening persons qualified to conjecture as to technological, biological, and social changes in the offing and to analyze the merits or the potential trends of such developments to good education. A few selected probablistic developments with a bearing on techno-, socio-, bio-, and human futures are mentioned below:

¹¹ Question No. 14 dealing with "situation breaks" and "counter-intuitive" developments is included in this section.

- (1) Further development of high energy physics; major innovation and application of laser beams
- (2) Refinements in the field of cybernetics
- (3) Major biological changes including non-narcotic cognitive releasants which might serve to free greater human intellectual potentials
- (4) Increased progress in mediating and manipulating the environment benignly
- (5) The possibility of a major power shortage which conceivably could send some U.S. corporations overseas for further expansion of facilities
- (6) Proportionately less tax money invested in U.S. education
- (7) Perfected birth control techniques
- (8) The slow spread of alternative family structures including child sharing
- (9) Possible topping off of population growth in the U.S. around 2000 A.D. and either voluntary or involuntary decline in world-wide population during the following 40 or 50 years.
- (10) Changes in various kinds of goods, as in the home construction field, from specific requirements such as the spacing of studs in a house to broad performance requirements as established by testing of a structure's resistance to 150 miles per hour winds
- (11) A reversal of the idea that unlimited economic and material growth is good
- (12) Appreciably increased use of the computer and data processing techniques
- (13) The development of super-conductors for the transmission of electricity and perhaps some years thereafter the wireless transmission of power
- (14) Recognition that improved seeds and grains per se will not solve the world's food problem
- (15) A re-examination of the so-called nuclear deterrence policy.

- (16) Growing general resistance to the use of nuclear and biological weapons
- (17) A continuing decline of racism and an accompanying increase in cross-ethnic marriages
- (18) A re-thinking of U.S. foreign policies and, possibly, a period of neo-isolationism
- (19) Recognition that technology probably cannot provide adequate substitutes for physical resources such as fuel, minerals, and fresh air. Major changes in consumption and production patterns may become inevitable unless major breakthroughs in the use of nuclear technology.
- (20) The possible tapering off in per capita energy uses and, conceivably, some decline in consumption as values are re-examined.

WHAT BEARING MAY RAPID CHANGE HAVE ON FUTURE PLANNING?

A question pertaining to rapid change was asked to ascertain whether or not futurists felt we might need to concentrate more on short-term planning and less on long-range planning--particularly because the speed with which the world appeared to be changing might preclude specific, valid, long-range conjectures. The most important point to come out during interviews dealing with this topic already has been made in Chapter II of the report, namely, that the present exponential curve of societal-technological change could top-off in the form of an "S" curve during the late 1970's and 1980's. (See pages and Figure 4 in Chapter II.) This might give rise to a more stable base for long-range social designs.

In general, futurists seemed to favor an increased investment of TEM units in attacking pressing problems that were coming to a head in the next few years.

WHAT GENERAL "FUTURES" ACTIVITIES INCLUDING
RESEARCH WOULD YOU PROPOSE FOR THE USOE?

This item has been combined with the two which followed it in the questionnaire and which asked: "With regard to 'futures' activities and policies, are there ways in which the USOE could make specific use of your advice, services, or resources?" and "In what futures study and/or futures planning venture might you wish to invest your energy?"

Most specialists in futures research and policy development expressed confidence that they could respond effectively to requests for their services from the USOE. Of course, the two Educational Policy Research Centers at the Stanford Research Institute and Syracuse have already been cast in this role.

Among possible activities proposed for the USOE were the following:¹²

- (1) A special conference on education focusing on sources of disagreements and issues that no one wants raised which would serve to identify the adverse effect which certain groups feel that certain alternative futures might have upon them. Such a meeting presumably would be sponsored by the USOE and would be administered through the joint efforts of the EPRC's.
- (2) A USOE-sponsored conference to endeavor to make some sense out of the contemporary values crisis and suggest tough-minded goals for education including policies regarding the relative merits of didactic, heuristic, and humanistic approaches to teaching and learning and of possible alternatives to or changes in conventional

¹²The fact that a suggestion is included here does not necessarily imply that the writer believes it feasible. (Some of the suggestions also indicate that respondents were not always aware of what the USOE already was doing.) The research and/or projects deemed most viable are listed in Chapter I.

education. Participants would be drawn from various disciplines as was done at the Woods Hole Conference which produced Bruner's small, influential book, The Process of Education (1960).

- (3) Development of a curriculum conference and follow-up work based upon instructional systems and technology. Such a project was seen as eventuating in recommendations for teaching aids congruent with proposed central tendencies as to desirable content in the curriculum. Such materials presumably would be developed by commercial producers and producers once topics had been identified and outlined in general terms.
- (4) The development, under USOE auspices, of futures-oriented curricula beginning at the elementary school level and extending through the university level (i.e., the development of instructional materials for "teaching the future").
- (5) Incorporation in USOE and NIE grants of the requirement that would-be contractors indicate in their proposals the type of alternative futures which their grant request presumably implies.
- (6) Consideration of ways in which the USOE might sponsor research grants, projects and studies which could be developed over a longer period of time than is usually allowable at present. This should include approval of funding at a time that would precede the availability of persons on the university market rather than occur in late summer or autumn when potential research workers tend to be under contract or committed for at least one academic year.
- (7) A study of the extent to which, in the last 10 years, inflation has created the need for increased support for funding, salary overhead, secretaries, etc., in USOE contracts.
- (8) Study the possibility of having, as an integral part of the USOE, a liaison group of three or four persons who report directly to the Commissioner or Deputy Commissioners with regard to the status of funded projects. This is not a suggestion for an added checkup on projects, but as a means of improving communication.

- (9) Develop two horizons for research studies sponsored in the future by the USOE and the NIE, one horizon dealing with ventures that can be implemented massively between 1975 and 1985; the other horizon concerned with the development of long-range plans pertaining to education for children and others who will spend most of their lives in the 21st century.
- (10) Develop a policy of encouraging long-term research; research which invests more time in the development of educational innovations, particularly with respect to programs of experimental schools.¹³
- (11) Begin to work more closely with research which emphasizes education as culture transmission. Approaching education through the rubric of culture transmission might open certain minds in important places to the possibility of utilizing many, many types and sources of information, personnel, and structures in the process of making education a "window on the world."
- (12) Contemplate sponsoring a study of the ways in which satellites could be used in transmitting courses over long distances. (For example, to implement a program for teaching Spanish or English to Spanish-speaking groups in South America.)
- (13) Consider developing policies within the USOE which recognized and rewarded persons using futures research and techniques in their work. "At present, persons are often rewarded for being safe rather than brilliant. Ergo, try to make the consequences of using logic and reasoning less frightening," one respondent said.
- (14) Consider a study which would explore changing structural and personnel policies in the USOE so as to increase the ability to do long-range (five- to ten-year) planning and which also would encourage more longitudinal studies.
- (15) It was suggested that USOE policies pertaining to elementary and secondary education should be more clearly differentiated with particular reference to greater flexibility in terms of research sponsored at the elementary school level.

¹³The "14-year plan" recently proposed by the Commissioner for purposes of creating massive changes in 10,000 schools--with funding for an initial five-year period--recognizes the need for continuity implied here in point 10.

- (16) Some time in the next five years, the USOE should try to create a totally new type of university, one really without walls and designed to encourage non-degree students to utilize the resources of a number of universities without fixed entrance requirements. Such students should have the opportunity to obtain degrees later by examination in the field in which they have studied from the new "without walls" university. This transcends the work done in New York State with respect to a lack of red tape, scope, and implicit variety in content.

WHAT RELATIONSHIP, IF ANY, DO YOU SEE BETWEEN
FUTURES PLANNING AND THE "SELF-FULFILLING
PROPHECY"?

Without exception, according to the writer's notes, futures research personnel felt that the self-fulfilling prophecy and the self-defeating prophecy were valid and important concepts. On the whole, respondents also concurred that the self-fulfilling prophecy was a desirable phenomenon since it enhanced the likelihood that wise futures research and futures-planning could actually lead to desirable interventions in the course of future events. Again, it was frequently pointed out that what officials in the U.S. government believes was likely to come true would likely come true because of the power of the funds which they were in a position to deploy as instruments of policy in furthering their beliefs.

WHAT ITEMS MIGHT HAVE BEEN ADDED TO THOSE
LISTED ABOVE TO INCREASE THE VALUE OF
THIS SURVEY INSTRUMENT TO THE
COMMISSIONER OF EDUCATION

Without exception, the participants in the study felt that the previous 19 questions, plus accompanying discussions were more than adequate for a survey with a focus as limited as that of the present inquiry.

SUMMARY

The present chapter, predominantly without extensive elaboration, has presented the views of U.S. futures research personnel on the relationships between their work and education. Their expressions of opinion were build around the 20 questions included in the survey instrument.

Concluding statement. O. Henry once wrote of Webster's dictionary that it was interesting but not a very well connected document! Perhaps Chapter III in this report is open to the same critical lament since it presents a number of disparate ideas from a variety of sources.

In "The Educational Significance of the Future" which follows in Chapter IV, an effort is made to bring the total study more sharply into focus. The strategy involved is that of envisioning education for the 1980's as it emerged in 1971-1972 from conversations with the biophysical, sociobehavioral and other types of scientists--logicians, mathematicians, demographers, and so on--engaged in futures research.

IV. THE EDUCATIONAL SIGNIFICANCE OF THE FUTURE

The fourth chapter of this report deals with the implications of policy research for education. It is based on information obtained during the 1971-1972 study of futures research, but the writer has stitched the data together in a design which portrays some of the directions in which U.S. education might go during the next five to 15 years. The ideas presented reflect clearly and honestly the nature of certain alternative futures toward which most participants in futures research believe that education should move. At the same time it must be understood that the total pattern of educational change is a mosaic developed by the writer; an interpretation inferred from the ideas of more than 80 scientists, logicians, mathematicians, and so, as they might appear when adapted or transplanted to the educational community of elementary or secondary schools and to post-secondary education.

On the whole, the views of futurists were liberal but not of an activist-radical sort. Neither was there any opinion that the schools were so ineffectual that the present educational system had to be scrapped and replaced with markedly different "neo-humanistic" or "deschooled" forms of teaching and learning. Nor was there any strong sentiment that "electronic packages" would greatly alter the basic nature of the educational environment in the immediate future. Rather, stress was placed on the need for educators better to implement many of the nascent trends and ideas of merit that already were in existence; in a word, to reform rather than to revolutionize education.

Most futurists were optimistic about educators' and communities' ability to reform the schools. Their main concern resided in the question of whether basic changes would occur as rapidly as circumstances required. If substantial changes such as are presented here are encouraged by USOE and NIE leadership, the educational universe of the 1980's would be profoundly different from that of the 1960's and early 1970's.

Changes that suggest themselves in U.S. education. What are some of the appealing changes that policy research in the U.S. urges upon educational leadership? Let us look first at major focal points. These are: (1) clarification of goals, (2) changes in the structure or organization of the school, and (3) possible changes and additions or replacements in subject matter. Each of these three points will be considered in turn in the sections that follow.

THE NEED FOR CLEAR, NEW SOCIAL AND EDUCATIONAL GOALS

At least since the early years of the century U. S. schools have been characterized by a wide spectrum of both academic and humane goals, some of which did not coincide. Our problem has not been the lack of educational objectives in curriculum guides and textbooks but a surfeit of them. Some were academic goals, others ranged from broad human development and life adjustment to ambitious approaches involving social reform and help for the disadvantaged. By the mid-1960's a strong and costly educational investment had become conspicuously overburdened with tasks that were dictated by goals that often were too numerous and too conflicting for the schools to

accomplish. Problems and disagreements extended from early childhood education through the post-secondary level.

The increased importance of goals. At the present juncture, most policy and futures research specialists agree that one of the nation's tasks is to determine what it really seeks in the decades ahead and what these aspirations mean for the schools. Lacking some form of social consensus as to what they should accomplish, U. S. education will remain in deeply troubled waters. This is because our schools are not independent agencies but function as an integral part of the culture as a whole--a highly polished speculum reflecting a social scene that has lost much of its stability because of the massive transitions of the past 40 years.

The need for new, clear goals is heightened because 20 years of increasing affluence in the U.S. has entrenched our appetite for more material gains for more people. We have moved from wistfully longing for a better living in the 1930's to hoping for a better quality of life in the late 1940's, to expecting greater material and human gains in the 1950's and to demanding them since the mid-1960's. The deterioration of the environment as a result of the accelerating quest for more goods, better services, more education, and greater freedom for all Americans has been extensively documented and poses some of the major paradoxes and problems of the 1970's.¹ We now

¹ The increasing tempo of discussion is clearly presented in the description of the U.N. Environmental Conference in Stockholm. Cf. Barry Commoner, "Motherhood in Stockholm," Harper's Magazine, 224: 49-54, June, 1972.

need to reassess our levels of social, material, and educational aspirations, futures research tells us, as we determine what the biosphere can provide, and to identify new, equitable, humane yet realistic levels of aspiration toward which we can afford to move.

Building an educational foundation for coping with alternative futures. One of the dilemmas of the present, as implied above, resides in the fact that society is both ambivalent and ambiguous in its aspirations and how schooling best can serve them. The confusion need not and should not, however, serve as a pretext for postponing certain basic reforms. Even while society comes to grips with the decisions that the times require, our schools can begin the task of studying and modifying or replacing educational doctrines and practices that have become of diminished value through the past 30 or 40 years.

The development of new educational futures for young learners, for example, does not imply any loss of respect for substantive content. No policies research specialist would propose that there is a substitute for being able to read and to interpret the nuances of the printed page. A suitable foundation does, however, imply changes in the climate for learning and new and expanded approaches to content. Examples of some specific suggestions from futurists which promise to help children and youth better to cope with alternative futures:

- (1) Provision, before as well as after birth, for careful physical and mental examination plus appropriate follow-up.
- (2) Experiences beginning with birth that promise to

create desirable cumulative cognitive input, with methodical schooling beginning no later than at age three.²

- (3) Emphasis on a "personalized" program which concentrates on the learner's optimum development rather than focusing on attempts to bring him up to group norms.
- (4) Careful efforts to build in the student a positive self-image--a positive view of himself--so that he does not feel he is "dirty," "stupid," a "nonreader" and so on.
- (5) Development of a suitable future-focused role image. (FFRI) This is analogous to the self-concept, but extends forward through time to delineate a realistic, motivating concept of the options he has in working toward a life-role that brings satisfying and promises self-respect and dignity.
- (6) Endeavor, even with quite young (10-12 years old) children, to study the "history of the future." Help them through old magazines, books, and papers, for instance, to see how "today" was foreshadowed eight or ten years ago, study how the neighborhood has changed in four to eight years. What caused these changes? Were they desirable ones? What was done--or not done--to bring about change? How do we go about the task of looking ahead? How does one identify alternative futures and prepare promising scenarios?
- (7) Identify ways in which children and youth can become of greater value to the community through work-service programs sponsored by the school and involving adults in the vicinity. (The purpose here is again to involve children in some of the useful work roles many of them filled prior to 1920 or 1930 and which gave them a sense of worth.) Cleaning up litter on beaches or parks or taking care of school clean-up needs are examples of non-exploitive jobs in which even six or eight year olds could engage. Older children and youth could perform many more forms of socially useful work, for example by serving as pre-paraprofessionals

² Many persons in the publishing and educational business fields also would deeply appreciate professionally acceptable guidelines as to the nature of good curriculum enrichment materials.

helping in programs for children of five and under, tutoring other children, handling teaching aids in school, or helping to prepare and distribute food provided through welfare programs. This approach could well eventuate in more widespread postponement of post-secondary education, perhaps decrease the relative number of persons seeking a baccalaureate degree, and more firmly motivate those who do seek to enter a field of work that requires academic credentials.

- (8) Utilize the community itself as a huge teaching aid by means of which many learnings could transpire. In effect this implies making the community environment not an alternative school but a more meaningful adjunct to schooling.

The eight broad points above are intended to suggest that the nature of educational programs which successfully enable youth effectively to mesh itself with any of a number of alternative futures that lie ahead. Patently, such programs will need to depart sharply from contemporary schooling practices which are predominantly passive, didactic, and cloistered within conventional classroom walls. In short, the proposed changes would profoundly transform the present school environment experienced in childhood, but without wrecking the educational community. There is no reason to believe that desirable educational changes cannot be made within the infrastructure of U.S. schools. The futurist's emphasis is on reformation and renewal rather than on demolition or revolution. Let us now examine some general characteristics of educational reform to be attained through wise choices among alternative possibilities.

A PROPOSED INFRASTRUCTURE FOR UNIFYING U.S. EDUCATION

What kind of changes in the organizational structure of U.S. education are suggested by the images of the future to which a number

of policies research specialists appear to subscribe? What does an extrapolation of their writings and research projects suggest?

As one examines the survey data and their implications for a new organizational structure, four points seem clear:

- (1) The infrastructure should be much more flexible: be less hampered by doctrinaire of "red-tape" regulations.
- (2) The deployment of instructional personnel should be more imaginative, more varied, and involve greater interaction with one's colleagues as well as with more transactions among both teachers and learners at more widespread age levels.
- (3) Deliberate, methodical provisions should be made for education beginning in early childhood and extending into old age.
- (4) The structural matrices for learning should become more permeated by the Third Force or Humanistic Psychology associated with writers such as the late Abraham H. Maslow.

In the realm of subject matter, which is discussed in the next section of the present chapter, futures research stresses seven points, namely:

- (1) That there should be continued powerful stress on the acquisition of meaningful substantive content, but that "content" should be more broadly defined in U.S. schools of the late 1970's.
- (2) That there should be less uniformity in what substantive content is acquired by a given learner.
- (3) That the time at which individual learners encounter similar ideas, content, and concepts should vary appreciably.
- (4) That more expressive and affective experiences should be introduced to lend better balance to instrumental and cognitive emphasis in the curriculum, and that the cognitive should more often be approached through the affective domain.

- (5) That despite an increased aura of permissiveness, the freedoms enjoyed should be free to accomplish, to learn, and to produce--not free of responsibility or from the need for the individual to contribute.
- (6) That changes will need to be made in current incentive and reward structures so that teachers and students alike--at all educational levels--will be motivated to adapt themselves to new and broadened concepts of performance, achievement, and "success."
- (7) Finally, that practice should more widely precede theory; that ideas and procedures should be tried out as one of the processes antecedent to becoming accepted educational theory.

With this preamble, attention now turns to a description of a modified organizational structure for the schools as implied in the suggestions of policy researchers.

A rationale for structural change. Changes in infrastructure suggested by our survey interviews would move the schools toward the vitalizing idea of a lifelong educational continuum of schooling. It would be more somewhat more complex than current organizational plans because of its widened scope and lengthened sequence, its variability and flexibility. But such a continuum also should be easier to administer because of the increased autonomy of individual units. It also should quickly become apparent to the reader that many of the ideas embodied in a lifelong continuum are not novel ones. Many of the pieces of the infrastructure are already in place in a small number of schools, and all of the pieces are on the inventory list of U.S. educational ideas. The contribution of the structure that emerges below lies in the Gestalt which it creates; the new mosaic of perceptions which have not heretofore been seen in a clear interrelationship.

The rationale for abandonment of the graded structure and present day schools in favor of a continuum can be stated as follows:

- (1) Human beings are unique, grow and learn at different rates, have accumulated quite different bodies of experiential input, and have diverse self-concepts and role images with respect to the future. Ergo, schooling should acknowledge the fact of these differences and drop the "impossible dream" of seeking to bring children and youth up to arbitrary and uniform standards of academic and social performance.
- (2) Learning is continuous and reasons for a nine-month September-June school year have lost whatever validity they once may have had. Ergo, with appropriate physical changes such as air conditioning for schools located in warm areas, we should be able to modify programs to permit children to attend for a total of 180 to 200 days, but spread throughout the year. The actual timing of attendance would be determined by professional judgment, family circumstances, efficient use of the school environment,³ and the future development of teaching materials that can be used at home.
- (3) Education, and the need for some type of experiences which schools can provide, extends throughout life. There are human needs at 40, 60, and even past age 70 that are as real as they are at age 5 or 15 or 25. There are needs for new skills as technosocial changes emerge, and for new knowledge in fields in which one studied a quarter of a century before. Also there are the steadily growing challenges of the constructive use of leisure, of preparation for post-retirement careers as life spans lengthen, and, of course, for interests and activities that can be encouraged and thus make old age something less to be dreaded.

On the basis of the rationale presented above, in what type of infrastructure do a substantial number of policy research specialists see merit?

³ Theoretically, genuine year around use of school facilities might increase their total annual occupancy by 20 to 25 percent. I.e., at least 120 children could occupy the space used by 100 children, and with less crowding.

Uninterrupted educational progress in a seamless curriculum.

Perhaps a simple statement, accompanied by uncomplicated models, is the best means of capturing the educational significance of lifelong opportunities for learning and of depicting the idea of a seamless continuum. We begin with education for the youngest.

Early childhood education. Although a seamless curriculum has no conventional segments, such as "pre-school" or "middle-school," such familiar terms are used to facilitate an understanding of the learner's progress through a continuum.

The child's first direct contacts with the educational community would occur near the date of his second birthday when non-school preschool experiences would begin. This would include obtaining data from physical and mental examinations, compiling background information, and so on. The non-school preschool interval also would provide a beginning for computerized cumulative record forms for what might become a nationwide student data bank.

Depending on his maturity, direct contact with a school program would begin near a child's third birthday. At this point he would, for half-days, enter a minischool group of six or eight other three-year-olds directed by a paraprofessional who, in turn, is supervised (along with six or eight other paraprofessionals) by a teacher-consultant with full credentials and experience. Work in the minischool would be educational rather than custodial, carried forward on a "developmental" basis--one deliberately designed to provide socialization and rich cognitive input. This input is gaining

greater importance as it becomes recognized that meaningful experiences may very well be the raw material of what is subsequently measured as intelligence.⁴ This does not, however, imply a need to provide early "academic" experience in reading or mathematics.

When he is approximately four in the seamless curriculum a child would find himself transposed⁵ to the pre-primary component of the curriculum. He would move from the mini-school when deemed ready, not at a set calendar date. Administratively, the change would be analagous to the processes involved when mid-semester transfer pupils appear in a new classroom because their parents have moved to a different school district. Furthermore, the pre-primary period proposed here is not the same as most contemporary four- and five-year-old kindergartens. It would be more of an educational "ready-room" than a custodial "romper-room;" a learning center with methodical input rather than a custodial center featuring supervised care and entertainment.

During the variable interval that a child spent in the pre-primary continuum, empathizing teachers, would create an interesting, challenging climate, and help each student to reach an optimum point before his transition into the program designed for him during the primary years. The fast-learning and mature, perhaps two or three

⁴Cf. for example, reports from the Milwaukee Project begun in 1966 with HEW funding; e.g., the Strickland reference in the bibliography.

⁵The term "transposed" is used in lieu of "promoted." Presumably one cannot be promoted in an unbroken or seamless curriculum through which he moves without the artificial promotions that now take him from one grade to another.

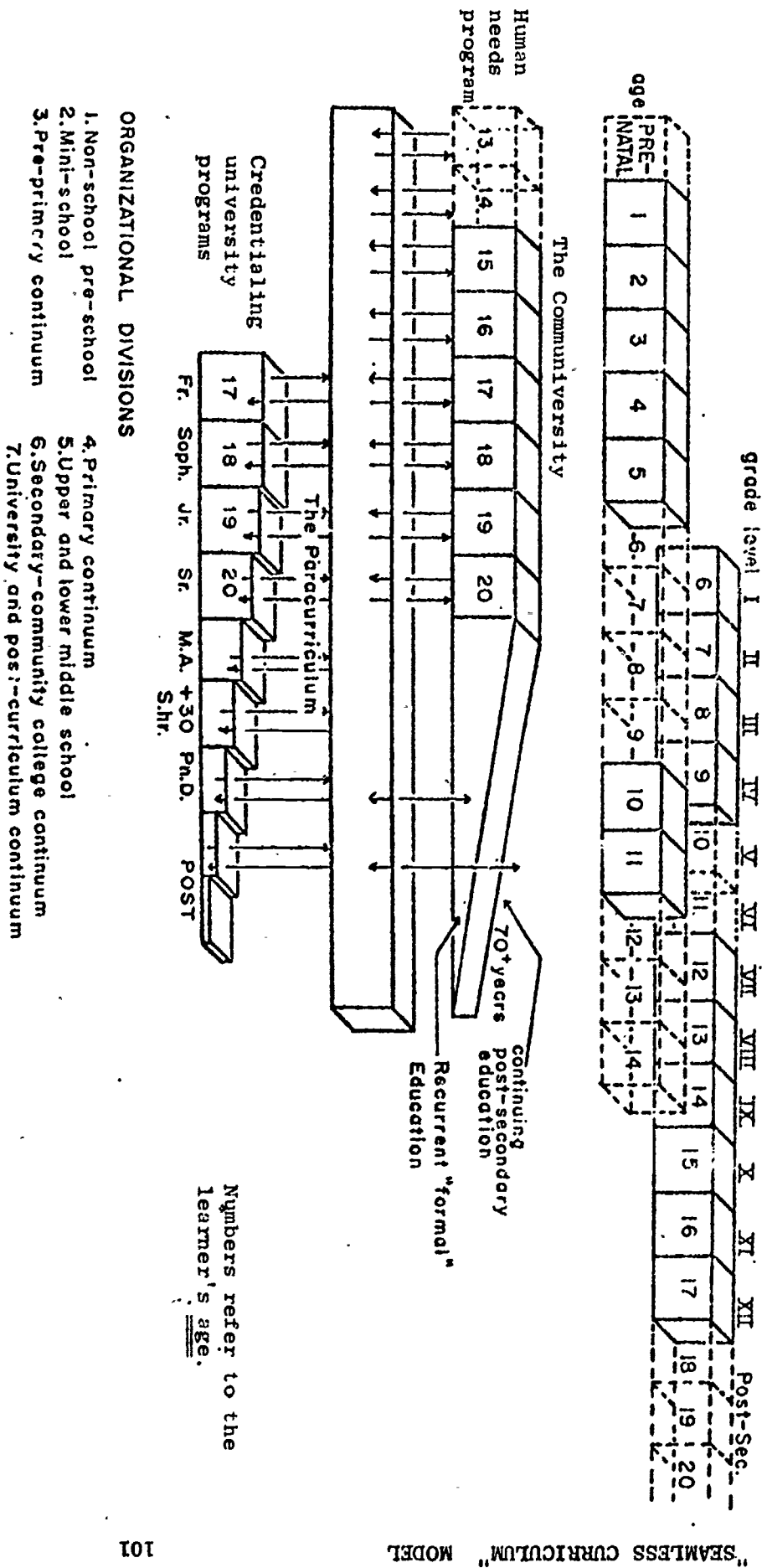
youngsters out of a total of 50, might move from the primary continuum into the primary school in as little time as one year, and as early as at age five, to work with children of six or seven. Conversely, some boys and girls (among them the physically handicapped, disadvantaged, culturally deprived, or slow maturing) might need to invest their time in three or even four make-ready years and postpone any extensive work with six- or seven-year-olds until they were eight and occasionally even nine.

During the primary years, which are conceived to be an integral part of a continuum beginning in early childhood, most children would be from six to nine years of age. But the groups in which they work would not be based on chronological age. Instead they would be ephemeral groupings built around emergent projects involving inquiry, exploratory, expressive, and cognitive ventures in which a varied mix of ages would be found--just as such children now work or play in informal, neighborhood groups.

The flow of learning during the middle school years. In the seamless curriculum, a model of which appears on page 101, the pupil would move, without interruption, from the primary continuum to the middle school continuum. The transposition would occur at whatever time during an unbroken school year that it became apparent (in the professional judgment of the faculty) that a young learner was ready to function in a predominantly 9- to 12-year age range rather than in a predominantly 6- to 9-year age cluster or pod. In some instances, where children in the middle school years and

FIGURE 5

AN EMERGING SCHOOL STRUCTURE FOR THE 1980's



primary years are housed in the same building, the child's transition to older working groups would be virtually undiscernible. In other instances, depending on the physical plant, a change in buildings would be involved.

The governing principles suggested for the primary continuum would tend to prevail in the middle school continuum. In the approximately three year span, the learner would spend from as little as two years to as many as five. The concepts of double promotion or "skipping" would totally disappear, however. So would the retardation practice of "flunking." In a personalized continuum, one would move at his own speed without reference to group norms.⁶ In the process, over a period of time, the age range of children in the primary and middle school phases of the continuum would and should extend so that eventually the elementary age range would be not from 6 to 12 years as at present, but would extend from 5 to 15 year-oldness--exclusive of programs for early childhood groups ranging from age two or three to ages five and six.

New secondary school concepts: the paracurriculum. Although the more structured content of many secondary schools would require some adjustments, the idea of uninterrupted progress should continue in the high school phase. This would involve careful guidance of the

⁶ The concept of "group norms" based on evaluation instruments would disappear. They would be replaced by "personalized norms;" i.e., quantified data on samplings of personal progress data for large groups of individuals sharing certain characteristics as to health, sex, intelligence, and so forth. This does not mean that standards would be abolished but the criteria would be different. That is, two persons of widely different abilities and performance levels might be equally successful if each performed at his full capacity.

individual learner, abandonment of many rigid contemporary requirements for admission and for an exit, and require considerable re-education on the part of those teachers who are predominantly subject-and-semester minded. Improving educational technologies, the development of more sophisticated programmed materials, and the increased use of differentiated staffing probably will ease many problems in a gradual transition to a continuum at the early and middle adolescent levels.

The most formidable impediment to changes in the secondary school program is likely to be found in the minds of teachers. Even those who quickly accept the merit of the seven points on pages 95-96 are likely to need considerable re-education with respect to cross-disciplinary approaches to subject matter, the flexible "teaching partnership" concept (See Figure 7 on page 111), and teaching to develop sought attitudes and values in addition to content per se.

One of the most interesting and least explored developments implicit in the continuum is the concept of the paracurriculum and its implications for major modifications in the compulsory education laws presently found in many states in the union. The paracurriculum concept recognizes that schooling provides only a part of the experiential input which adds up to the learner's education. Indeed, in many instances the non-school learnings of children and youth may be by far the most extensive (and sometimes the most valuable) components or factors in helping him to cope with, manipulate, and control his environment.

Before continuing further, the term "paracurriculum" should be defined. The word refers to the body of out-of-school experiences which help to strengthen the intellectual ability, general background, and coping powers of the child or youth. To whatever extent possible, secondary and post-secondary education institutions should deliberately plan to make greater and more deliberate use of the paracurriculum.⁷ As shown by the model in Figure 6, the paracurriculum--the world of non-school experiences for which the school is participatory planner and for which it serves as a broker--parallels the curriculum as the name obviously suggests. As is illustrated by the model, the paracurriculum involves world-of-work experiences, sometimes without but usually with pay, which temporarily or permanently replace in-school activities.

As conceived here:

- (1) At age 15, perhaps even as early as age 13 in rare instances, a student for whom it is judged appropriate could engage in a useful vocational activity without attending school.
- (2) His lateral move from the world of the school to the "real world" would be arranged or "brokered" by the school, a process which involves teachers' professional judgments, in-depth counseling, parental understanding, consent support and cooperation, and close working relationships with employers who are socially minded and willing to offer their enterprises as alternatives to conventional schooling without exploiting 14- to 16-year-old worker-learners.

⁷ The same generalization holds true for the early childhood and middle school years, but the paracurricular experiences of 3- to 12-year olds would vary in nature and degree from those of adolescents and children would remain enrolled in school.

- (3) The paracurriculum would eliminate "push-outs" and dropouts. One does not drop out of the educational continuum; he moves at a 90 degree angle (see model) into planned paracurricular learnings and continues his education in what, hopefully, will be an experience of increased educational significance.
- (4) An integral part of the paracurriculum is the privilege of infinite, methodically planned lifelong exit and re-entry privileges carefully coordinated through enlightened guidance practices. (See arrows in Figure 6).
- (5) The continuum of schooling and the paracurriculum are portrayed as being almost as intimately related as Siamese twins; and both deeply involve the educational community. By age 14, after approximately a decade of guided, personalized progress, the early adolescent would be helped to move from curriculum to paracurriculum and vice versa without problems and without any clinging stigma. Furthermore, with graded structures abandoned there would no longer be an eighth grade group or a sophomore class from which to withdraw. Age ranges, greatly increased by the flexible and often ephemeral and functional approaches to grouping, would also make exit and re-entry inconspicuous and matter-of-fact as in graduate study where persons in their early twenties may rub shoulders with students twice their age.
- (6) As envisioned here, the paracurricular concept is not a limited innovation applicable at the early adolescent level. Rather it is part of the total warp and woof of lifelong education. It is applicable even in early childhood in the form of simple community service contributions (e.g., keeping a park or playground clean) and in the learner's later maturity when perhaps at 60, he returns from the paracurricular to the curricular realm with the hope of making his retirement more meaningful or a post-retirement job feasible through further education.

Despite the novel organizational configuration of the paracurricular concept, it is made up of components that have already been discussed and sometimes introduced on the U.S. educational scene under such labels as "socially useful work," "continuing education,"

or "paid internships." As the idea of a seamless, lifelong, year-around educational continuum gains acceptance, the paracurricular concept might well become a viable and important concomitant source or launching pad for many alternative approaches to learning in the educational future. It clearly reflects the idea that we do not need alternatives to schools, so much as we need more alternatives within the established educational community.

Post-secondary education. Our résumé of possible changes in the infrastructure of U.S. education, as inferred from futures research, now is described with reference to the final phase of the continuum: the post-secondary phase including, of course, the university but also embracing forms of non-collegiate post-secondary learning resources.

As shown in Figure 6, the post-secondary student might either be a person who had completed four years of secondary (curricular) education or be someone who had been continuing his education in world-of-work (paracurricular) activities. In either case, he would not be deprived of access to, or of the opportunity to complete, whatever components of education that brought him personal satisfaction or increased the likelihood of vocational success.

Also notice, in Figure 6 that "Secondary" and "post-secondary" education (color-coded green) are depicted as an uninterrupted continuum. They are paralleled by the lifelong paracurriculum (yellow code) and intimately interlinked by infinite exit and re-entry privileges which insure that no one at any age is deprived of post-secondary educational opportunities from which he believes he can profit.

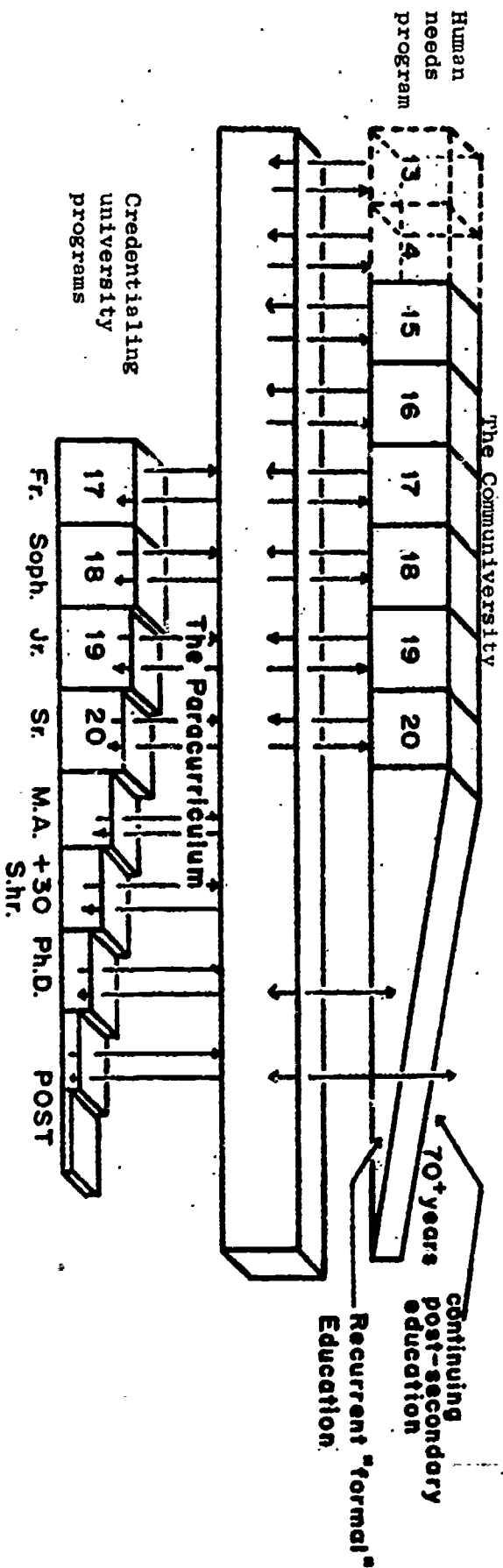
As shown in the model, a distinction is made in the proposed infrastructure of the continuum between secondary/post-secondary education (green code) and credentialed university education (red code). Presumably, for the foreseeable future, the culture will maintain levels of study leading to advanced certificates or degrees and continue to rely on certification or similar credentials in an effort to insure that persons are qualified--insofar as laboratories, examinations, classrooms, clinics, and supervised experiences can qualify them--to enter a given professional or service field.⁸

The green coded section representing post-secondary education is also intended to portray a growing recognition in the future of the need for persons of 40, 60, or older to be able to participate either steadily or periodically in many forms of what was known as adult education or "night school" in past decades. The main differences in provisions for lifelong post-secondary education as depicted here resides in:

- (1) Imaginative and relevant changes in the curricular and paracurricular offerings at the post-secondary level including not only new, pertinent community college or communiversities programs, but also changes in the secondary program. In keeping with the "seamless continuum" concept, for the purposes

⁸ Opinions of policy researchers regarding the nature and extent of the preparation of teachers aides, paramedics, technicians, and the like are varied. Considerable opposition exists to extensive formal preparation lest, by such preparation, various para-professionals become specialized to the point that, say, as teacher's aides, they price themselves out of the market by becoming more skilled than need be for services in schools with differentiated staffing.

**FIGURE 6 MODEL OF AN EDUCATIONAL CONTINUUM
ILLUSTRATING THE CURRICULAR-PARACURRICULAR
RELATIONSHIP IN THEIR SECONDARY AND POST-
SECONDARY PHASES**



of mature learners,⁹ all educational resources should be open to them on a non-credit basis, with the prerogative of taking examinations if they decide later to seek credit for green-coded advanced study in the red-coded channel (cf. Figure 6).

- (2) Gradual but fundamental changes in certain contemporary images of and practices in liberal arts colleges. In effect, the present-day four-year arts and science component of the university would become the community, but with appreciably expanded, purpose, scope, and non-credit enrollment. While retaining much of their traditional content and general education function, arts and science offerings, much content would be expanded or modified to meet the needs of more learners of all ages and would "find room in the folds of their academic robes" for every viable form of post-secondary learning to which learners aspired.
- (3) A flexible viewpoint regarding grouping for learning as well as creating a psychological climate for learners of a much wider age-range. Teachers at the secondary and community levels as well as in the university need to become adjusted to working with qualified learners of virtually all ages as the multiple exit and re-entry concept penetrates educational practice. A precedent--as noted earlier--may be found in university graduate study where, in a given class or seminar, persons in their early twenties may rub shoulders with individuals 30 years their seniors.
- (4) Ways must be explored to permit mature learners to return as "come-backs" or "drop-ins," a reversal of the present dropout phenomenon. This involves cooperative, enlightened policy planning by industry, government, and education. Job security, imaginative financial provisions, and changes in employment and retirement policies are a few of the elements that seem certain to be involved in lifelong learning opportunities.

The modified organizational infrastructure which has been briefly described above is not capable of existing--nor is it even

⁹ Some British institutions have a "mature student" category which not only permits but encourages eclectic as well as prescribed studies; a category that might be explored more fully in the U.S.

possible to create--without certain substantial changes in the deployment of teachers in all fields of endeavor. What are the needs and possibilities here seems to be congruent with the research and thinking in the realm of futures research?

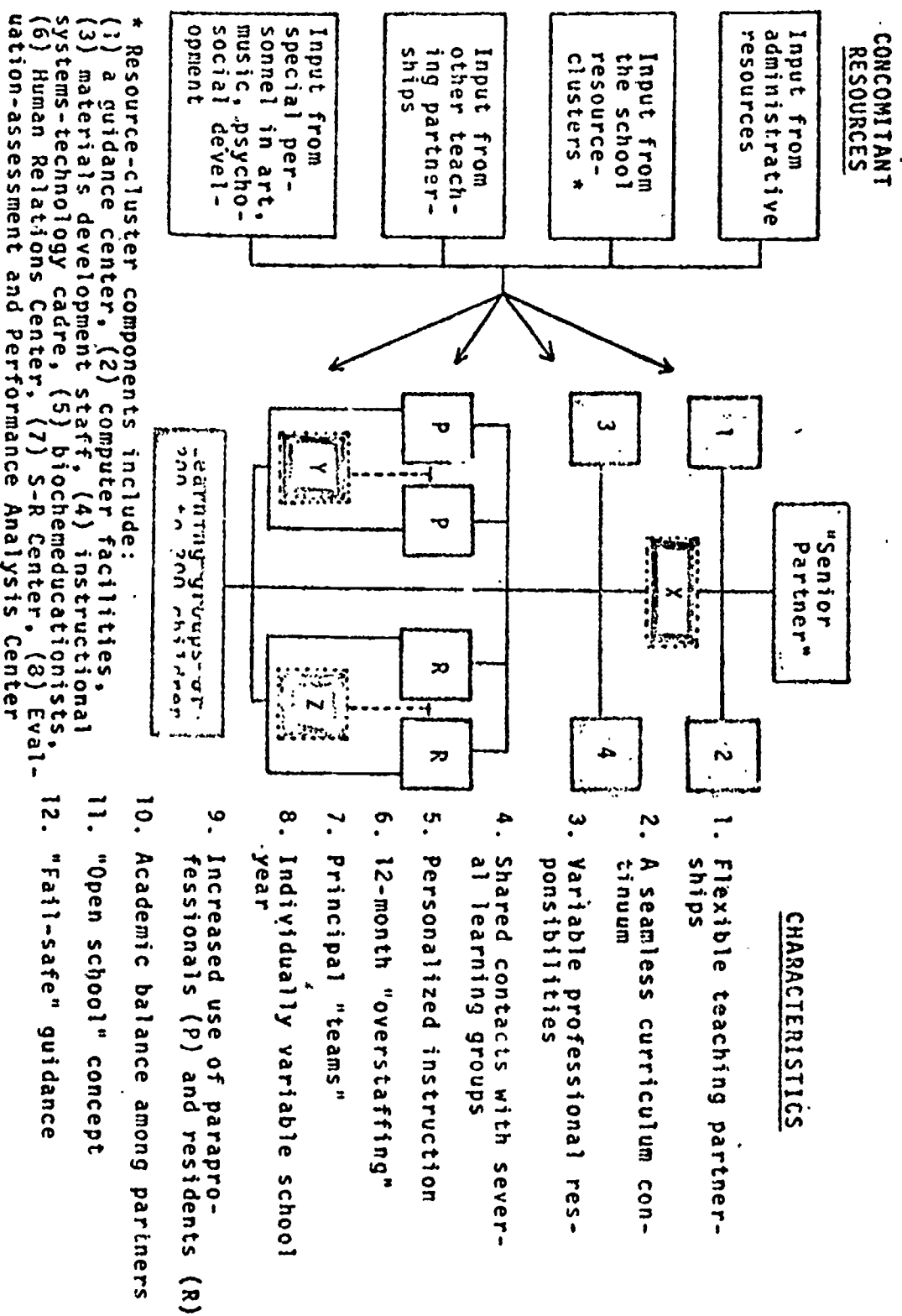
Staff deployment. Among alternative educational futures is the possibility that the current concept of team teaching needs to be extended or at least appreciably modified to develop "teaching partnerships," especially if the continuum concept is introduced on a widening scale. The teaching partnership is depicted in Figure 7 which follows.

Although the model illustrates a teaching partnership as it might appear in the primary or middle school phases of a seamless educational continuum, the basic ideas are applicable even in a departmental structure at the university level. This staff deployment involves:

- (1) The basic idea of differentiated staffing with a "senior partner," certificated teachers (numbers 1-4), paraprofessionals (P) serving as teacher aides, and residents (R) who are fully qualified teachers either in their first or second year or more mature teachers returning, after some years of absence, to ready themselves for participation in new instructional roles.¹⁰
- (2) Since the "continuum school" presumably would operate on a 12-month year, it would employ more teachers, aides, and residents than actually are on duty at a given time. This point is depicted by the "X," "Y," and "Z" enclosed by broken lines. The "X," for instance,

¹⁰ The residency concept would be especially important during the next decade since many universities are not now preparing teachers to work either in teams or in differentiated teaching partnerships. The residency should serve to provide the necessary apprenticeship or added preparation that often is needed.

FIGURE 7 MODEL OF THE TEACHING PARTNERSHIP AND ITS ASSOCIATED SUPPORT SYSTEMS



"DIFFERENTIATED STAFFING MODEL"

symbolizes a teacher who does not have a classroom duty assignment at a given interval. He may be working on a curriculum or materials preparation assignment, engaging in professional study or research, or taking some vacation or leave time. With appropriate modifications the same generalizations apply to teacher's aide "Y" and to resident "R".

- (3) As suggested by Figure 7, the "teaching partnership approach" influences staff deployment on a wider basis than the flexible teaching cluster, per se. The lefthand heading, "Concomitant Resources," suggests other new staffing strategies including "administrative resources in the form of principal teams." Instead of working on a one-principal-to-one-building basis, a team of, say, four persons, could serve as special leadership consultants in four buildings, plan as a cooperative group, and spend their time as professional judgment dictated. All four might be in one building for a week, for example, or be engaged in any number of individual variations of time-investment.
- (4) Various characteristics of the teaching partnership are listed to the right of the model. They serve as a summary of various qualities of the seamless curriculum mentioned earlier and which have a bearing on the differentiated staffing in the partnership.

Like an ancient Gaelic or Greek triskelion, the seamless curriculum has three branches. We have discussed infrastructure and staff deployment in education. Now what do policies research specialists have to say about changes in the content of instruction during the coming decade?

SUBJECT MATTER FOR THE NEXT DECADE

"Idealistic" and "realistic" perceptions. As one might logically infer, futures research personnel were deeply interested in educating children and youth to develop their ability (1) to recognize and to select wisely among alternative futures, (2) to

develop skills--including "process" skills--needed to implement desirable futures, and (3) to devise motivating experiences that would prompt young learners to become realistic in their views and active in working for a more viable society both in the U.S. and internationally.

These three aims presumably would permeate or at least influence the selection and design of subject matter for a seamless, personalized curriculum and paracurriculum. At the same time it was difficult to obtain many specific suggestions for changes in content from futures planners except in the most global of terms. While often willing to draft general plans, the social, behavioral, physical, and biological scientists, logicians, engineers, mathematicians, and so on participating in the present survey felt that it was the prerogative of professional educationists to determine policies. They therefore expressed few highly specific ideas regarding the scope, sequence, timing, and pacing of what was taught. To put it concisely, most policy decision personnel advocated reforms in conventional education without prescribing many precise new practices. Considering the alternative, this seems a highly desirable posture!

In general, then, there was agreement on the broad aims to be sought through instruction, warm acceptance of the need for schooling to develop moral and emotional strengths, to improve physical well-being, and to nurture cognitive power. As might have been expected among a scholarly group (a large majority of the survey participants had at least one earned doctorate), there was great respect for an

education to insure mastery over whatever skills an individual could achieve mastery. But there was also widespread recognition for the point that many different ceilings-of-academic-achievement should be recognized in both curriculum and paracurriculum. As a consequence, education must reverse its present stubborn and obsolete practice of overemphasizing the fancied socioeconomic and social status advantages to be gained by entering vocations associated with professional, managerial, ownership, or executive-type roles. Conversely, not enough stress was being placed on the dignity and importance of all kinds of labor with hands as well as minds or on the many kinds of technical jobs open to persons without a college degree.

The typical futures research person emerged as an "idealist" in the sense of seeking curriculum content for better alternative futures and as a "realist" in the sense that he saw a continued need to maintain many long-established educational values, firm rather than harsh intellectual discipline, fair but not unreasonable standards for individual accomplishment, and the need for mastery of substantive content on the part of those whose contributions to society would thereby be increased.

Emerging characteristics of "new" curricular content.

Rather than radical changes in the nature of what was taught, futures researchers felt that major changes were required in what was emphasized in a seamless curriculum. What many of them believe should receive more emphasis, by the way, was signaled in Chapter II, pages which dealt with social problems that a majority

of futurists deemed to be critical. Let us look at plausible new content and emphases based on inferences from out interview data but not on specific content in a given subject.¹¹

First, and perhaps foremost, stress would be placed upon regaining (in a more enlightened form) the social discipline that gave Western man and perhaps most of mankind a sense of direction before the present value crisis, which with its relativism and permissive qualities, interfered with the steady whirl of the culturally imposed "inner gyroscope" that provided a course for the individual to follow--or at least to refer to--earlier in the present century.

Second, through education, an assault would be made on the strongly cemented redoubts of materialism; most specifically on the culture's misplaced confidence in materialism--"in consumer stuff"--as the most important goal of life. As David Riesman once noted, the morale of even a meritocracy can be ". . . undermined because its scientific and rationalist temper has no religious basis and the system no transcendent aims, no goal beyond its own further advance."¹² Policy decision specialists would appear to agree that material goods in themselves leave the deeper longings of the human spirit or psyche unsatisfied and can surround us with more and more ecological

¹¹ A number of readers will note that some of the curricular changes are aimed at slowing or reversing certain possible outcomes of the "Basic, Long-Term Multifold Trend" identified by Kahn and Wiener on page 7 in The Year 2000 (1967), and by Kahn and Briggs in Chapter I of Things to Come: Thinking About the 70's and 80's, 1972. (See bibliography).

¹² Herbert J. Muller, The Children of Frankenstein, Bloomington, Indiana: Indiana University Press, 1970, p. 403.

threats unless--through education--we direct attention to changing our "thing-centered" values and heretofore unchecked appetite for consumer goods.

Third, the dangers and problems of the naive use of technology (as powerfully presented by Barry Commoner¹³ when he portrays problems in our ecosphere) would provide appreciable content.¹⁴ The attitudes uniformly expressed during the survey not only supported the importance of technology in bettering man's lot in most parts of the world, but also reflected the overwhelming need, through the prudent use of technology, to ease the problems of unthinking use of La Technique as Jacques Ellul called it. At all age levels, the need to rethink the use made of technology could be injected into the curriculum especially in relation to deterioration of the biosphere.

Fourth, the curriculum should begin to respond more adequately to the threat of damage to the biosphere; damage that could be profound and irreversible. Already, some futurists feel, the present

¹³ Cf. especially Chapter 9 in his The Closing Circle. New York: Alfred A. Knopf, 1971. Here Commoner uses persuasive data to illustrate where we erred in the use of technology after World War II, an era during which "... productive technologies with intense impacts on the environment have replaced less destructive ones." (p. 177).

¹⁴ It must be recognized that the new curricular emphases presented would assume many and different forms with children of varied age levels. With younger learners, a way of ecologically sound living would be based mostly on example and simple precept. In the university phase of the curriculum continuum, however, one might, for example, in a school of architecture or engineering find that how to build an airport as a thousand foot building is carefully linked to the study of whether and if so where construction occurs to avoid further damage to the biosphere. Here is an example, too, of cross-disciplinary study in heretofore "unrelated" fields such as architecture and biology or biochemistry.

scene is a mask for pending global catastrophe. While few if any are as pessimistic as Paul Ehrlich, or as harsh as William and Paul Paddock in Famine 1975,¹⁵ all probably would agree that "Since the environmental crisis is the result of the social mismanagement of the world's resources, then it can be resolved and man can survive in a humane condition when the social organization of man is brought into harmony with the ecosphere."¹⁶ Patently, education would have an important role here when and if major social decisions are reached with respect to national policy--and there is a great deal of groundwork to be begun in the schools during 1972-1973.

Fifth, most futurists apparently would like to see the schools face up to the fact that in the U.S. there is no really satisfactory coping doctrine for a major and almost totally ignored dilemma of democracy. This is the point that, as judged by the overt evidence, most Americans are unwilling to settle for a merely égalitarian society. Instead they view "democracy" as a social order in which they are free to gamble on attaining "equality" with the top 10 percent, not as a means of attaining equity for all. Many of the concepts of the Founding Fathers have so far managed to survive because of political ingenuity, compromise, and the ability of the social establishment heretofore to accommodate a great deal

¹⁵ William and Paul Paddock, Famine 1975. Boston: Little, Brown and Company, 1967. Cf. esp. p. 226ff.

¹⁶ Barry Commoner, op. cit., p. 299.

of upward mobility. But education in the next decade may need to emphasize concepts of greater equity in democracy and discard the dream that everyone can rise above his father's status in life.

Sixth, education needs to continue to sensitize the learner to the problems and to the neo-Mathusian dangers in unrestricted breeding. Futurists vary as to dates at which the problem might become catastrophic,¹⁷ but there is universal agreement that education for population control is imperative.

Seventh, and last, a number of futures researchers doubtless would urge new educational input to assist learners to cope with the potential power of mass media in shaping opinions and attitudes. Also, the post-elementary curriculum would be shaped by the study of possible dangers in mind control by other means (e.g., chemical and electrical stimuli) in addition to television, radio, or publications.

It seems self-evident that many changes in our current society will need to be encouraged before the merits of the seamless curriculum attain widespread acceptance. These include giving up some of the importance we have learned to attach to material things, a reassessment of how we interpret democracy and equity, breaking away from the age-grade lockstep to which we have been

¹⁷ One gloomy estimate by the Scandinavian scientist, Ehrensvaerd, is that beginning in 2050 the world population will shrink from over 12 billion to 3 billion. The latter figure represents all the people that the diminished resources of the world can sustain in 2070 if present rates of consumption and increases in consumption are projected. He concludes that 10 billion people will die off (2020 to 2050 A.D.) in the process of stabilizing population at the 1970 figures of 3 billion.

conditioned for a century or more, and divorcing our thinking from long-accepted ideas of failure, and a myriad of similar beliefs and traditions which presently determine or influence educational thought and practice. But the potential for change and for re-conditioning our thinking probably has never been greater than at present as so many appealing and appalling alternative future present themselves in the last quarter of humankind's most frenetic century in history.

CONCLUDING STATEMENT

The seven points above imply substantial innovations in teacher preparation, perhaps with regard to residencies for teachers to acclimate them to open education during a period when programs in teacher education shift from an emphasis on self-contained classrooms to more flexible staff deployment as in teaching partnerships.

Futures research personnel, as of 1971-1972, had a great deal of respect for the potential importance of education in the areas of socially desirable educational change. They saw schooling as extending downward and upward to encompass both younger and older learners. Likewise, the curriculum was seen as becoming more flexible and easier to administer than when hampered by traditional structure and practices, yet at the same time more complex in its provisions for improving personalized, lifelong post-secondary education.

Sweeping changes of a novel nature were not anticipated in the present content of the curriculum with respect to mathematics,

language, or science, but major reformations in what was emphasized in the various disciplines was clearly encouraged by the views of policy research workers.

The writer was left with the impression that education had a large number of valuable innovations already stored in the educational idea-bin. Many of these have already been supported by agencies such as the USOE--but they need to be put together in a mosaic or a Gestalt in order to carry U.S. schools toward the broad alternative horizons which futurists were contemplating with feelings of urgency that were nonetheless blended with basic confidence. The writer also felt, at the close of the present inquiry; that the USOE and NIE should contemplate proposed ventures that they repeatedly are urged to support in the context of the kind of alternative future which such research or demonstration contemplates or proposes to explore. In short, the USOE should "buy into" projects which show awareness of and while hold a promise of carrying us toward a lifelong continuum of education.

The self-fulfilling prophecies which are believed and accepted by persons in top leadership positions in funding and change agencies such as the USOE already have triggered many developments and activities. Selected proposals from the recommendations in Chapter I of this report can be institutionalized--can be clothed in reality--by selective deployment of funds and by commissioning research and change strategies that will carry U.S. education beyond its locked-in segmentation and norms to lifelong provision for self-realization through more flexible, humane, and insightful schooling.

V. SUGGESTIONS REGARDING THE IMPROVED USE OF USOE POLICY RESEARCH CENTERS

One of the Commissioner's explicit requests was that the writer endeavor to suggest how the Educational Policy Research Centers at Syracuse University and Stanford Research Institute might be used to best advantage. This request was not intended to initiate any type of evaluation or "one-man site visit," but rather to suggest informally whether there are ways in which communications might be improved, advice sharpened, overlap avoided, whether or not two centers were needed, whether one combined center might operate more effectively, and so forth.

In the following pages an attempt will be made to answer the following questions:

- (1) Are there problems which reduce the potential contributions of the Centers?
- (2) From a professional point of view, how valuable are the products of the two Centers?
- (3) Are there steps which might be taken in program development to enhance the contributions of the Centers?

ARE THERE PROBLEMS WHICH REDUCE THE POTENTIAL CONTRIBUTIONS OF THE CENTERS?

One of the major roadblocks to more effective use of the EPRC at Syracuse and at the Stanford Research Institute--in the opinion of staff members--was the problem of communications. Administrative heads and junior staff members in both locations felt that they had no reliable way of obtaining feedback on the influence of their reports, of assessing the value of their reports, or of sharpening the preparation of subsequent reports. There is a need to find methodical means of providing the Centers more clues

as to their success and possible needs for improvement. At present they are in the position of a radio broadcaster who knows neither who is tuned in to his station, nor how the listeners, if any, are responding to his program.

The problem here is one which may be inherent in the USOE's relationships with many of its projects: how to keep in touch with program developments, how to suggest important changes, how to obtain information quickly, and so on. This problem in two-way communication often exists despite the talents of the most competent project officers.

To lessen the communication barrier it is urged that the USOE consider spelling out more fully the functions that it would be desirable for the EPRC's to perform and the goals they should attempt to reach. This might include quite specific assignments in high-impact research on the implications of developments on the educational scene.

It would also seem to make sense in the high pressure atmosphere of Washington in the 1970's for the Commissioner to assign a personal ombudsman to serve--at least on a part-time basis--as a liaison with the EPRCs and with analagous sources of data and opinion which the USOE may sponsor--analagous in the sense that they have important personal input to provide for the Commissioner and his immediate associates. The services of someone who is an elder statesman in education would be invaluable.

Another major problem is that of increasing the visability of the work of the EPRCs in the eyes of the educational profession. In

the writer's opinion, even many sophisticated educators in key positions (superintendencies, deanships, etc.) are no more than dimly or broadly aware of the nature and value of the thinking and products of the Centers.¹

The importance and the urgency of the tasks upon which the Policy Centers have focused seem clear, but the writer would like to see the ideas of staff members make a greater difference in the thinking of professional educators through improved visibility. This should come to a focus on current policy decisions as well as on futures research. While the years between 1975 and 2000 A.D. are of interest to the professional educationist, he is confronted by a myriad of problems and decisions with respect to which he must take action now. Naturally, then, counsel and ideas focused on present-day policy choices will command greater attention and interest than will ideas or plans associated with more distant futures.

Although a two- or three-day visit does not provide bases for categorical recommendations, it occurred to the writer that it might be helpful if each Center had one or two additional staff members of maturity who were well-seasoned in public education. Some capable EPRC staffers were young and therefore had as yet acquired only limited experience in teaching and administration. While one of the great strengths of personnel at the Centers is the diversified

¹ Partly to remedy the situation, the writer negotiated arrangements for staff members from the EPRC to develop a paperback to be distributed late in 1972 by the National Society for the Study of Education. The paperback deals with futures and policy research.

background which each one brings to his job (engineering, mathematics, philosophy, etc.), there also is a need for persons on the staff who are intimately acquainted with public school structures, curriculum, opportunities and constraints, personnel policies, and other elements that are a part of the total educational scene. As the USOE indicates more fully and more explicitly some of the kinds of policy on which it would like to receive advice, it will become even more important to have on hand the type of personnel proposed.

Because policy decisions involve wide-ranging and specialized matters, it also might be well to consider employing an educational specialist or two on a short-term consultative rather than on a long-term permanent basis for at least two obvious reasons: (1) a person with special knowledge of a field (e.g., school finance or curriculum) may be needed for only a short while in a given situation, and (2) highly qualified persons are not easy to pull from their present positions and are costly to hire except as ad hoc consultants.

FROM A PROFESSIONAL POINT OF VIEW, HOW VALUABLE ARE THE PRODUCTS OF THE TWO CENTERS?

Potentially the work that has been done at the Stanford Research Institute and Syracuse EPRCs is of great value to the profession. The USOE has performed a real service in funding the futures research and policies study which thus far has transpired. The products are of particular value to students interested in curriculum development and to those who desire to probe probable alternative futures which may lie before education. While the contributions from Syracuse and ERI differ in emphasis, they are equally stimulating and interesting.

In view of their relatively short lifetimes upon the occasion of the writer's visits, the Centers also had given strong signs of both productiveness and imagination in the things that they were undertaking. While all of the products may not have been of direct value to pressing policy decisions in Washington, they are nonetheless of great interest, of important long-term value, and of help in clarifying the educational futures field.

As noted above, there is a major need for calling the attention of the educational profession to the work of the Centers and corollary work done by other futures agencies and groups mentioned earlier in the report.

Regardless of the educational interest of the products and ideas available through the ERPCs, they almost certainly could be made of greater value to the profession and to the USOE if a closer liason existed among both Centers and the USOE. Contributions can be enhanced appreciably by more specific assignments, cross-fertilization and coordination, and explicit assignment of specified tasks related to policy decisions.

ARE THERE STEPS WHICH MIGHT BE TAKEN IN PROGRAM
DEVELOPMENT TO ENHANCE THE CONTRIBUTIONS
OF THE CENTERS?

The query in the section heading above must be answered with a categorical "yes." Some important steps in program development for example, might include greater emphasis upon the development of curriculum materials pertaining to the teaching of the future and teaching for the future at elementary, secondary, and higher education

levels. While promising work along this line is in progress at The Office for Applied Social Science of the Future at the University of Minnesota (directed by Dr. Arthur Harkins), a great deal remains to be done particularly in the elementary and secondary levels. Quite specific and perhaps detailed suggestions would be the kind most likely to have an impact upon practice. Imagination should be used in finding channels to circulate the material, to move it quickly into the educational bloodstream.

For instance, a 200-page monograph dealing with educational policy prepared by one or both of the Centers would be likely to reach a much larger audience if distributed by the American Association of School Administrators or the Association for Supervision and Curriculum Development. Also the printing and editing could be done without cost to the government if such an agency as the AASA or the ASCD were to handle it. Some persons with strong classroom backgrounds would be needed, perhaps, to supplement present staffs in developing materials that treated educational policies in a future context.

At least for a year or two, educational materials might be prepared by the two Centers with first one and then the other taking a major leadership responsibility. Such publications should be planned in cooperation with journals such as TODAY'S EDUCATION, the PHI DELTA KAPPAN, or EDUCATIONAL LEADERSHIP, all of which have many thousands of readers. The process of negotiating and preparing such publications should, in itself, help further to sharpen the work in progress at Syracuse and at SRI.

The task of generating or exploring interesting and needed projects in education also is a needed step for the Centers. In recent years a number of vital ideas have come upon the educational scene: vouchers, performance contracting, accountability, performance-based criteria, and assessment to name a few. Centers could probe such proposals and ideas before policy decisions were made and also develop as seed beds for comparable ideas.

Let us consider a hypothetical assignment, Would it be possible to study whether or not the USOE might profitably invest funds in a basic inquiry into the possible nature of audio-visual or instructional systems technology materials which would encourage curriculum change? For purposes of discussion, let us assume that textbooks and other available materials have, for over a century, been one of the most important mediating factors in determining the nature and structure of content. Would it, therefore, not be a desirable policy decision to develop specifications for "audiovisual-instructional systems technology" materials that commercial publishers could produce?

This is not a proposal to create a de facto "national curriculum" but to present to the profession central tendencies in recommended content in various subject areas on which there is now little agreement. The recommendations would be concerned with the topic and content of films, slides, recordings, etc., that would enrich other than rigidify the content of information.³

³ Many persons in the publishing and educational business fields also would deeply appreciate professionally acceptable guidelines as to the nature of good curriculum enrichment materials.

Let us take another example of a focus for policy decisions. It might be related to modifications in teacher education programs to develop in the profession a future-focused role image. This would involve policy discussions and decisions on such matters as how best to prepare personnel to work in diversified staffing situations before there is a wide market for their services--and how to create markets in the interests of economy and efficiency. This is an important task for the next three to five years.

A third useful assignment for the Centers would be to develop a future-oriented policy statement and guidelines to be used by persons seeking USOE grants. Such a statement might require that proposals, after a given date, indicate the image of the educational future--and its values--which their designers envision. Many proposals probably would be more sharply written and easier to evaluate if they clearly designated that the writers had made wise selections among alternative futures which they were endeavoring to mediate. At present too many proposals reflect attempts merely to remove problems from the present scene rather than to create and introduce the future through original, productive innovations.

As noted in earlier parts of this report, there is a universal belief among futures researchers that the transformations of the past 50 years have created a value crisis. This crisis permeates society and the schools reflect its problems, ambivalence and malaise. In the 1950's we were critical of how well schools performed their functions. Now there is confusion as to what those functions are. Under these circumstances the most important single contribution

that the EPRCs might make in the next year or two would be to endeavor to begin to provide a thoughtful sense of direction to U.S. education in terms of purposes, content, methods, organization, and finance. Such a statement as this envisions--one in the tradition of the now-abandoned Educational Policies Commission--is sorely needed. It could reverse the centrifugal spin that has pulled some schools apart and perhaps help us to see that we do not need independent alternative schools so much as we need alternative opportunities within the established educational community.

The need to attack our values crisis leads to the suggestion that the two EPRC pool their resources as needed to sponsor several carefully designed, methodically planned joint conferences be held if possible during the coming academic year 1972-73. The conference design probably would consist of three sub-sessions scheduled about four or five weeks apart and might be analogous to the conference which the writer originally submitted to the Commissioner and his associates in the late spring and early summer of 1971.

Such a three-phase conference would include:

- (1) The development of a consensus among transdisciplinary scholars as to important trends and developments that have a bearing on alternative educational futures in the U.S. Participants in this first phase of the conference would include perhaps 25 persons distinguished as social scientists, biochemists, biophysicists, economists, and the like.
- (2) The second phase would involve an analysis of the social consequences for education of the trends identified. Participants would now include distinguished educators as well as persons from appropriate disciplines.

- (3) The final phase of the 3-part conference would involve the development of an action agenda for U.S. schools and provide for the Commissioner's office data on a highly specific nature in regard to goals, research and flexible innovations extending from early childhood through advanced post-secondary education. The focus would not be on the remote future but upon the four fiscal years beginning with fiscal year 1973-74.

A great deal of initial thinking relevant to such a major conference has been done at both EPRCs. Each has important human and material resources which, when modestly supplemented, should enable the Centers to make a major break-through in policy decisions which could have a tremendous influence on the future of U.S. education. In an era of uncertainty, this would be a source of great reassurance to the educational community and further enhance the reputation of the USOE as a source of important leadership.

SUMMARY

The original purpose of the present report may be found in the letter written by Deputy Commissioner Davies on behalf of Commissioner Marland. Basically, its goal was to describe the state of the art of future planning, to identify promising work, and to suggest how the USOE might utilize the results.

In this context it can be stated that the Syracuse and SRI Centers are more broadly, effectively and uniquely concerned with professional education than are any other centers included in the study. Furthermore, the EPRCs have made use of personnel from such places as RAND Corporation, the Futures Group, The Hudson Institute, and the Institute for the Future (East and West Branches) in a manner which has strengthened their activities. In short, the USOE has

through its Policy Centers an open door to virtually all futures thinking and policy research now going on in the country. This source of data should be preserved but it also should be widened. It best can be widened through a major "capstone conference" of the sort proposed on the preceding pages, jointly directed by the two Policy Centers, and with appropriate liaison work to insure the linkage of such a conference to other major futures research workers.

The value of the EPRC~~s~~ can be enhanced by improving their visibility, by delegating to them more specifically delineated tasks to be done for the USOE, by emphasizing short range policy decisions and by arranging for more futures-oriented planning of research proposals and requests for USOE-supported grants. Lastly, there is a need to improve communication with the USOE, including feedback to the Centers, and a more precisely defined body of criteria by means of which the Centers can assess their progress in providing useful input for the Commissioner's office.

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